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BY

HENRY BRIGGS, M.B., F.R.C.S.,

PROFESSOR OF OBSTETRICS AND GYNAECOLOGY, UNIVERSITY OF LIVERPOOL.

A PREMATURE birth on December 25th, 1642, at Woolsthorpe, in Lincolnshire, is historical.

"A widow, whose husband had died a few months after their marriage, gave premature birth to a posthumous male child. He was so weak that two women, sent to fetch a tonic to revive him, did not expect to find him alive on their return. He was so small that he could have been put into a quart mug. So, in after-days, his mother told him. When he grew to manhood he saw an apple fall from a tree in the Woolsthorpe garden; he pondered the matter, and, by-and-by, he propounded the law of gravitation. Sir Isaac Newton was rescued from his infant danger by his mother's love. But who may tell how many an undeveloped philosopher has perished from lack of an intelligent mother's care?" [1]

To-day the loss of a large proportion of babies is reported even after the skilfully conducted and well calculated operations and manipulations of the best obstetric practice. During the past fifteen years the high infantile death rate from preventable causes has been greatly lessened by the activities of local health departments, with incalculable gain to the country. Infant welfare knows no restriction in pictorial illustration, and its attractions are universal; the progress of maternity welfare work, on the other hand, has been repeatedly held up from within and without by formidable obstacles. Of late, however, the Ministry of Health and the Ministry of Education have sought and published full information concerning maternity welfare, and although at present there are many difficulties in the way of capital expenditure, local statutory subcommittees under the Maternity and Child Welfare Act should increase their faith in higher obstetrical and gynaecological service—the core and the backbone of maternity welfare. In the eagerness of enterprise ideas are let loose often only to gather adjectives and succumb; if an idea survives to become a motive and to be carried into actual practice, control makes a collar round its neck. One such collar may be seen in advertisements for pre-maternity clinic medical officers, when it is stated that "every circumstance being equal, preference will be given to women candidates." It has not been shown that women medical students have had in the past any exceptional advantages of training; patients desire, and are entitled to, the services of the most skilful of the available applicants.

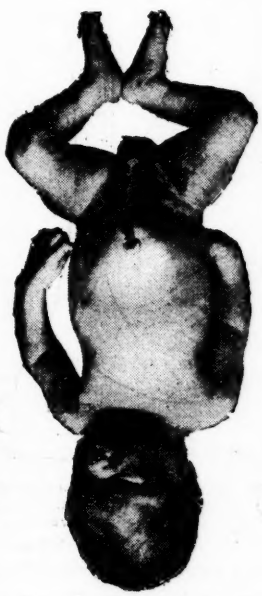

FIG. 1.—A still-birth: unreduced occipito-posterior head moulding. Forceps bruising of the right cheek and temple. The blood stains on the right groin and thigh were due to a loose ligature on the cord.

The Teaching of Obstetrics and Gynaecology to Medical Students and Graduates.

In London the teaching of obstetrics and gynaecology to medical students and graduates has been dealt with recently in the report of a committee of inquiry appointed by the Council of the Obstetrical Section of the Royal Society of Medicine. To draft a guiding report—appreciative of the present and constructive for the future—is a formidable task. London is of gigantic growth, and complexity is a part of her fate and a good deal of her security. The extent, depth, candour and honesty of the present report cannot be too freely acknowledged.

Regarding the methods at present adopted general agreement is expressed in the report that—

(1) The systematic instruction is generally satisfactory. (2) The practical instruction is defective in several respects: (*a*) From hospitals without a students' midwifery ward students are sent out, often alone, to cases in the district. (*b*) The lying-in hospital merely "signs up" for cases. (*c*) In hospitals with a students' midwifery ward, the small size of the latter and non-continuous attendance by the student, who is rarely in residence, are to be noted. (*d*) The teaching, if any, is given almost exclusively by juniors (the registrar or the resident obstetric officer). (*e*) The average number of gynaecological beds is too limited: restricted attendance by the student at the time taking out his midwifery cases has been observed. (*f*) The consequences of defective practical training fall on the mother and the child—on the mother in the death rate from sepsis and in disabling complaints; on the child in that it is too often left to the nurse's discretion without reference to the doctor. (*g*) The neglect, notably in emergencies, to seek the services of a specialist or of a hospital contributes to the lack of hospital accommodation for women in labour and of suitable public means of transport.

These frank statements disarm all criticism on the need for more efficient practical instruction. The basis of an efficient scheme of training was also outlined, and the report so far carried complete approval.

With regard to reforms required in the future, unanimity in the Council was not secured, and the two propositions that led to the slight dissension are stated in the Alternative Report. They were: (1) The establishment of large centres devoted solely to the study of obstetrics and gynaecology, and not forming part of a general hospital and medical school; (2) the suggestion that the students can only be educated efficiently where large numbers of patients are available.

FIG. 2.—Full term central placenta praevia. The dark shading denotes the increased area and distribution of the placenta. (Reduced.)

At this point a halt is dictated by the observation that the adoption of the report, or of any alternative or alternatives, is directly the concern of London—where to introduce harmony by yielding, or giving and taking, is probably not beyond attainment, preferably from within. The general body of the medical profession has proved over and over again the advantages of special departments in general hospitals, especially those with medical schools. Wherever separate centres for obstetrics and gynaecology are essential these centres will be established; their medical officers, after limited tenures of office, will seek other obstetrical and gynaecological posts in general or special hospitals where skilled teaching and training are desired for medical students or graduates and pupil-midwives or midwives.

London will rise to her own gigantic demands. Lesser municipalities may be reminded that the late Sir William Sinclair of Manchester in 1907 pleaded for the establishment of municipal maternity homes. The practising midwives are supervised and the pre-maternity clinics administered by local authorities. In Liverpool 720 in-patients were admitted to the Maternity Hospital in 1918—499 by direct application to hospital, the remainder from the following sources:

Transferred in labour from the outdoor ladies' charity	23
Sent by medical practitioners...	115
Sent by practising midwives after failure to find a registered medical practitioner ...	41
Referred from pre-maternity clinics	42
	221

This analysis establishes the great value of the Liverpool Maternity Hospital for obstetrical training, and shows that in a very large proportion of the cases the difficulties and complexities of labour arose or were first realized during labour. Dr. Stookes, one of the honorary surgeons, has recently summarized [2] the thirty-three years' work done in the present building opened in 1885. Dr. R. A. Hendry has described [3] an illustrative day's work at one

of the prematernity clinics. Being given a hospital performing central functions, and in close contact with the University, Liverpool has not completely failed. Extensions are urgently wanted and the hospital board of management is in difficulties, for the building of Sir William Hartley's new hospital cannot reasonably be commenced. Converted houses are the only alternative to expensive temporary wooden sheds which the present site cannot accommodate. Each week ten to fifteen applicants, whose homes or lodgings are overcrowded or unsuitable, are refused admission. Fortunately these cases are normal, and the large Poor Law institution is across the road, so that smooth transference on foot, or by stretcher, is possible. There is this striking contrast: the Poor Law institutions possess wide and open doors, and in some areas are inviting and encouraging paying patients at a time when public health authorities are seeking more beds.

The obstetric assistant, preferably a graduate with distinction, having experience of one or more hospital resident posts, serves under university departmental control, and supervises the practical obstetrical work of the students who reside with him in his official residence—a university hostel—during the period of their attendances on at least twenty labours. Daily attendance at the Liverpool Maternity Hospital is as follows:—

(1) Ante-natal care.
(2) Out-patient and ward visits at 10 a.m. by the obstetric assistant or the registrar, or both; at 12 noon by the honorary surgeon on duty in his three months' rota. (There are four honorary surgeons, of whom one is the university professor *ex officio*.)
(3) Labours and obstetrical operations at any hour of the day or night.

It is significant that students have almost invariably partly or wholly, given up a vacation to their practical training in obstetrics; these holiday sacrifices recall the overdue remedy, the revision of the whole medical curriculum. It is to be remembered as a reason against too formidable an inflation or isolation of obstetrical and gynaecological educational courses that our students have already attended the systematic lectures on medicine, surgery, and midwifery, and have for at least nine months become familiar with clinical methods in a general hospital, during their medical clerkship (six months) and surgical dressership (three months). Throughout all past inquiry obstetrics and gynaecology have been declared inseparable either in teaching or practice. The constitution of the department of the Liverpool University therefore stands on the ground of long-standing and firm agreement; generous support has been bestowed upon it during twenty years by the University Council, by the Medical Faculty, by Medical Practitioners, and by the Liverpool and District Trained Midwives Association. This concerted encouragement has developed equipment additional to the usual lecture theatre, namely, a practical classroom and a laboratory and a museum, which invite and tempt the students to see and test for themselves (during daily working hours) the normal and the abnormal in fresh and preserved specimens; to practise palpation on mannikins supplied with normal and abnormal fetuses, and to cultivate under trained departmental supervision, familiarity with instruments, appliances, casts and operation methods.

The saving of time in the overcrowded medical curriculum becomes reflected upon clinical clerkship and systematic study, for both of which it is an essential preparation and accompaniment; practical tests have always been prominent in the university final examination in obstetrics and gynaecology. It is thus seen that in the obstetric clinic at Liverpool the recommendations of the General Medical Council have been carried out for twenty years; the result has been a steady improvement in the clinical obstetrical training of all students and an encouraging record of public service of past obstetric assistants. The department is of opinion that the education and training of the pupil-midwives should be provided within its walls, but not necessarily by the same teachers; this will bring to the midwives a more exact acquaintance with the relative extent of the doctor's education and training.

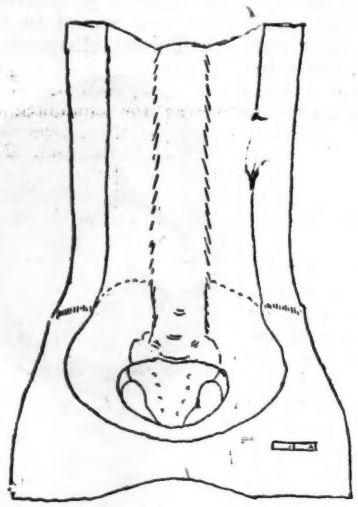

FIG. 3.—Mannikin opened to show the type of contracted rachitic flat pelvis.

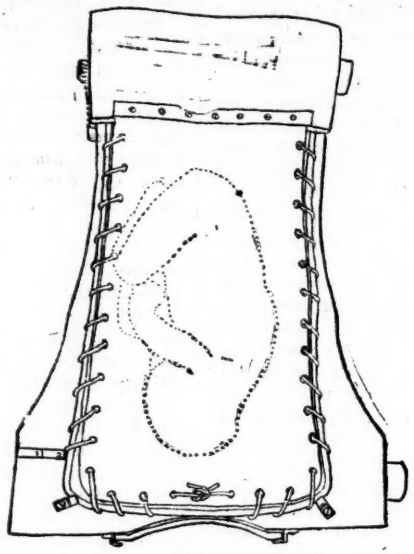

FIG. 4.—The mannikin closed during vaginal examination of the pelvic cavity.

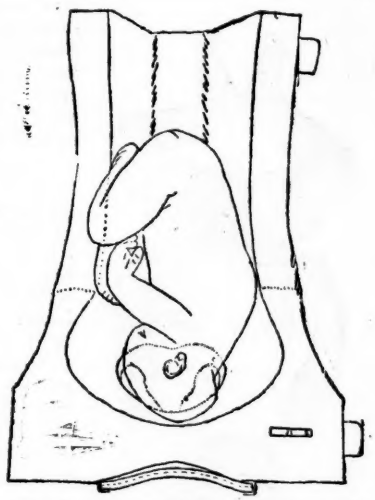

FIG. 5.—The mannikin and fetus arranged for abdominal and vaginal palpation; the fetus held above the brim; forceps not to be applied; 3-inch conjugate.

Details are given below of cases illustrating the need for the uses of such an organization as I have depicted.

CASE I.

A male fetus, 10 lb. 11 oz. in weight and 22¾ in. in length, stillborn as a result of natal incidents (Fig. 1). The healthy mother, aged 38, had had three early abortions and had borne six living full-term children. In her tenth pregnancy, on the computed 270th day, the vertex presented in the R.O.P. position. In the patient's house, in the district of the Ladies' Charity, the obstetric assistant called by the midwife performed a difficult forceps delivery. There had probably been an error in the reckoning of the duration of the pregnancy; protracted gestation and oversize (which are not, however, incontestable) were not suspected at the time of labour.

What ante-natal officer or other medical man would have ventured to advocate Caesarean section in the treatment of the labour unless the patient had been under observation before the suspect stage?

CASE II.

In a case of central placenta praevia (Fig. 2) a fatal haemorrhage, without appreciable dilatation of the cervix or separation of the placenta, occurred in the public ambulance during a journey to the maternity hospital. A full-term uterus and well-grown fetus in the first vertex position above a central placenta praevia amply denote Caesarean section.

What authority could safely and prudently provide against the intervention of this sudden calamity?

CASE III.

A primigravida, aged 34, already three days in labour, arrived in hospital at the 301st day of gestation with a large dead

fetus, 8 lb. in weight, *in utero* above the brim of a generally contracted pelvis; the membranes had ruptured prematurely through a 1 in. dilated cervix; the temperature was 102° to 103.8°, and there was a rigor on each of the three days in hospital before the completion of the labour. The fetal head was at once perforated to assist descent; feeble pains were observable and, full dilatation of the cervix being attained two days later, the collapsed head having reached the perineum, the child was with great difficulty extracted. The temperature immediately became normal; the recovery of the patient followed without further complication. The fetus was macerated and had been ten days dead.

In this case the head was above the brim in the primigravida, the gestation prolonged and the pelvis contracted; the lesson is that fetal death and maternal danger could have been avoided by previous examination and consultation. In Liverpool we endeavour to sharpen the dull grasp of history, symptoms, and physical signs by the cultivation in the practical classroom of individual research and repeated experiment. Deformed pelves display their truths and normal pelves stand by them for comparison. We have twelve mannikins in hard wood—teak excels oak, although the slight cracks in the latter can be easily filled with cement. Each mannikin (Figs. 3 to 6) is an accurate

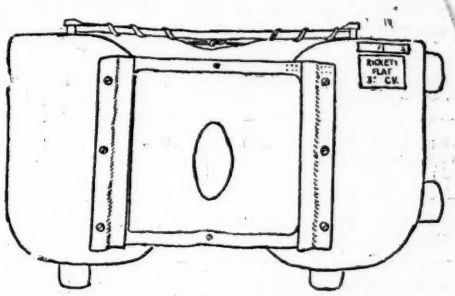

FIG. 6.—The galvanized iron frame and the rubber pelvic floor can be removed and cleaned. The iron frame slides under the grooves beneath the fixed iron plates.

copy (made by an expert carver) of a pelvis. It is placed in a dorsal position on a short, stout table, and can be washed and dried. The natural pelvic floor is imitated in each mannikin by a movable rubber diaphragm. In an adjacent cool tank are placed a number of normal and abnormal fetuses in a freshly preserved state. The value of practical trials with forceps on fetuses and mannikins cannot be overestimated. In calmer moments between the class hours facilities for familiarity with the employment of forceps steady the students' individual judgement with regard to patience or haste, and the conditions qualifying for success or disappointment in using the forceps-grip. (In dystocia the application of forceps cannot be commended, except in appropriate physical conditions.) Similarly craniotomy on a dead fetus is an operation demanding repeated trials. Version and intrauterine manipulations, including the manual withdrawal or separation of the placenta, are to be learned by the use of suitably sized clear glass globes placed within the mannikin; for this purpose fresh fetuses and placentae are provided. Without having received these preliminaries in practical training the student carries with him an awkward handicap in any future clinical work that he may undertake in homes or in hospital.

Bacon drew a distinction between arts mechanical and sciences of conceit. "In sciences of conceit the first author goes farthest and time lesseth and corrupteth, but in arts mechanical the first devise comes shortest and time addeth and perfecteth." In this brief sketch I have tried to illustrate the use of arts mechanical in obstetrical and gynaecological training.

REFERENCES.

[1] *The Nursling.* Sir Alexander Simpson's Introduction. 1907. [2] BRITISH MEDICAL JOURNAL, November 21st, 1919, p. 701. [3] Ibid., September 20th, 1919. p. 385.

TWO uncommon causes of death have lately been reported. A child of 4 died at Blackburn from toxic gastritis, following the eating of about thirty potassium chlorate tablets. A boy of 12 died at Wrexham from poisoning, due to the use of a stem of hemlock as a pea-shooter.

THE Cunard Steamship Company have contributed £10,000 in response to the appeal of the University of Liverpool.

EIGHTY-EIGHTH ANNUAL MEETING

OF THE

British Medical Association.

Held at Cambridge June 30th to July 2nd.

PROCEEDINGS OF SECTIONS.

SECTION OF TROPICAL MEDICINE.

Professor G. H. F. NUTTALL, M.D., F.R.S., President.

PROBLEMS OF FILARIASIS.

BY

J. W. W. STEPHENS, M.D., F.R.S.,

AND

WARRINGTON YORKE, M.D.

(Liverpool School of Tropical Medicine.)

HAVING recently had occasion to study the literature of filariasis we found therein many conflicting statements. Our intention in this paper is to draw attention to some of these, as they concern fundamental questions, an accurate solution of which is necessary for elucidating the relationship of *Filaria bancrofti* to those forms of lymphatic disease which are commonly known as filariasis.

TABLE I.—*Showing Microfilaria Rate at Different Age-Periods.*

Age (Males).	Bahr (1912): Fiji.		Cruickshank and Wright (1914): Cochin India.	
	Population.	Percentage Infected.	Population.	Percentage Infected.
0-10	72	1.4	25	24.0
11-20	222	15.7	246	20.3
21-30	212	37.7	233	22.7
31-40	118	47.5	199	27.1
41-50	83	45.7		
51-60	58	44.8	58	20.7
61-70	39	41.0		
71 and over ...				

According to Bahr's data the microfilaria rate for males increases at each age-period up to the 31-40 period, and then remains practically stationary, while according to Cruickshank's and Wright's figures for males the rate is practically the same at all age-periods. If these data represent the actual state of affairs in the two countries the difference is remarkable and requires explanation. The

TABLE II.—*Showing Microfilaria Rate among those showing Signs of Lymphatic Disease and among those not showing Signs.*

Author and District.		Number Examined.	Microfilaria.	Percentage.
Manson (1883), Amoy, China	Diseased	65	38	58.5
	Not diseased ...	605	24	4.0
Bahr (1912), Fiji	Diseased	*221	99	45.0
	Not diseased ...	*91	31	34.0
	Diseased	†79	16	20.0
	Not diseased ...	†95	8	8.0
	Diseased	‡86	28	33.0
	Not diseased ...	‡184	44	24.0
	Diseased	§30	10	33.0
	Not diseased ...	§143	21	15.0

* Males over 20 years.
† Males under 20 years.
‡ Females over 20 years.
§ Females under 20 years.

matter is of importance, because if in certain countries the microfilaria rate differs at different age-periods, then the fact must be taken into account in estimating the microfilaria rate of a population and also in comparing microfilaria rates among the diseased and non-diseased.

The data of both these observers (Table II) agree in that the microfilaria rate among those showing signs of lymphatic disease is greater than among those not showing signs, but it is noteworthy that the difference in Manson's figures for the two groups is great (54.5 per cent.), while in those of Bahr the difference is relatively slight, the maximum being 18 per cent. We have been unable to find in the whole of the literature any other comparable data on this important question, and it is obviously one on which much further information is required.

If, however, we limit ourselves to a consideration of elephantiasis cases (a condition which is generally regarded as the most important pathological manifestation of infection with *Filaria bancrofti*) we find that the evidence, whether the microfilaria rate is greater in these or in non-elephantiasis cases, is contradictory.

TABLE III.—*Showing Percentage Infected with Microfilaria amongst Elephantiasis and Non-elephantiasis Cases.*

Author and District.		Number Examined.	Number Infected with Microfilaria.	Percentage.
Manson (1883), Amoy, China	Elephantiasis cases	25	5	20.0
	Non-elephantiasis cases	645	57	8.8
Tribondeau (1900), Society Islands, Pacific	Elephantiasis cases	62	23	37.1
	Non-elephantiasis cases	*38	6	15.8
Bahr (1912), Fiji ...	Elephantiasis cases	47	18	38.3
	Non-elephantiasis cases	1,273	340	26.7
Manson (1907), Cochin India	Elephantiasis cases	14	1	7.1
	Non-elephantiasis cases	74	20	27.0
Cruickshank and Wright (1914), Cochin India	Elephantiasis cases	130	12	9.2
	Non-elephantiasis cases	870	197	22.6

* Some below 10 years of age, majority 15 to 25 years of age.

While Manson (1883), Tribondeau (1900), and Bahr (1912) agree that microfilaria is more common in elephantiasis cases than in non-elephantiasis cases, Manson (1907) and Cruickshank and Wright (1914) find the reverse. The close agreement of Manson's (1907) figures for Cochin India with those of Cruickshank and Wright (1914) for the same district is interesting, and we may reasonably infer that they represent the truth, nor have we any ground for doubting the accuracy of the figures of Manson (1883), Tribondeau, and Bahr, but the cause of the discrepancy requires investigation.

Next, if we compare the microfilaria rate and the elephantiasis and abscess rates in different countries we find an absence of any definite relationship.

TABLE IV.—*Showing the Microfilaria, Elephantiasis, and Abscess Rates in Different Countries.*

Author and District.	Number Examined.	Percentage Infected with Microfilaria.	Percentage with Elephantiasis.	Percentage with Abscess.
Manson (1883), Amoy, China	670	9.2	3.7	—
Rouffiandis (1910), Mayotta, Comoro Islands	3,000	—	74.0	Less than 1
Manson (1907), Cochin India	88	24.0	16.0	—
Bahr (1912), Fiji	1,320	27.1	3.56	20.0
Cruickshank and Wright (1914), Cochin India	1,000	20.9	13.0	0.0
McNaughton (1919), Funafuti, Ellice Islands	217	100.0	3.7	—
Croll (1919), South Queensland	4,112	11.3	0.0	—
Brochard (1910), Wallis Islands	4,000	—	50.0	Very common.

Table IV shows, for example, that the filaria rate (of those examined) in Fiji is higher than that of Cochin India, its elephantiasis rate is only about a quarter that of the latter place, and its abscess rate is 20 per cent., while that of Cochin India is nil.

Next, if we consider the manifestations of filariasis exhibited in different countries we find they vary greatly. Table V shows, for example, that in Fiji enlarged lymphatic trunks are nearly ten times as common as in Cochin India; that in Cochin India enlarged inguinal glands are nearly twice as common as in Fiji; that in Comoro Islands 12 per cent. of the population suffer from lymphangeio-varix of the scrotum, none in Wallis Islands, Fiji, or Cochin India; and so on.

Finally, the region of the body most commonly affected with elephantiasis appears to vary in different countries; thus, in Fiji elephantiasis of the arm is relatively common—in 42.6 per cent. of elephantiasis cases the arm is involved; in French Congo elephantiasis of the arm is apparently absent.

Many difficulties surround the filariasis problem, and the examples given above serve, we think, to show some of the directions in which further investigations are required.

TABLE V.—*Showing the Frequency of the Various Clinical Manifestations of Filariasis in Different Countries, expressed as Percentages of the Total Population Examined.*

Author.	Number Examined.	Microfilaria Rate.	Enlarged Lymphatic Trunks.	Enlarged Inguinal Glands.	Enlarged Epitrochlear Glands.	Enlarged Axillary Glands.	Lymphangeio-varix of Scrotum.	Chyluria.	Orchitis.	Chylocele.	Inguinal Adenovarix.	Elephantiasis.	Abscess.	Fever.	Hydrocele.
Brochard (1910), Wallis Islands ...	4,000	?	?	Common			0			0	0	20	Common	?	Common
Rouffiandis (1910), Mayotta, Comoro Islands	3,000	?	?	?			12	Less than 1		59	76	74	Less than 1	?	
Bahr (1912), Fiji	1,320	27.1	4.7	*25	22		0	0	?	?	0.08	3.56	20	?	?
Cruickshank and Wright (1914), Cochin India	1,000	20.9	0.5	51.4	36.8	22.3	0	0.6	0.9		0	13	0	29.4	7.7

* ? Includes axillary.

FILARIA BANCROFTI IN THE PRODUCTION OF ELEPHANTIASIS AND KINDRED DISEASES.

BY

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In dealing with this somewhat difficult and complicated subject it will, we think, conduce to clearness and also be advantageous if we express our views in a categorical manner under the following headings:

(*a*) Zoological.
(*b*) Pathological.
(*c*) Statistical.

(*a*) *Zoological.*

The parent filariae are inhabitants of the lymphatic system and may be found living either in the lymph channels or in the glands themselves. From our work on the subject we consider it probable that, by acting as mechanical irritants, or by the excretion of some irritating toxin, either from the cuticle or in the faeces, as we know takes place in other helminthic infections, they produce a local inflammation of the vessel wall and of the glands which they inhabit.

The embryos born in the lymphatics of man, provided they are able to secure a free passage into the circulating blood, do not of themselves produce any obstructive changes; in other words, the embryos of *Filaria bancrofti* are non-pathogenic. That this is the case may be gathered from a consideration of the life-history of filariae in general. It would be greatly to the disadvantage of the parasite if it were otherwise, for, if the embryos were capable of causing grave pathological changes in the host, this fact would necessarily militate against the favourable spread of the parasite from man to man.

Statements to the effect that perfect health of the human host may coexist with a filarial infection have frequently been made, but, if the after-history of such cases were systematically followed up more often than they are at present, it would be found that sooner or later many would develop definite pathological signs of a lymph stasis. We have records to support this statement in our own experience, both from the West Indies and from Fiji.

It is questionable if any helminth, especially those inhabiting the arterial or lymphatic vessels, is harmless. We have only to consider "verminous aneurysms" in horses, the cardiac disease of the dog, due to *Dirofilaria immitis*, the ravages of bilharzial disease, to illustrate the point.

(*b*) *Pathological.*

The part played by the filaria in producing pathological symptoms of lymphatic obstruction is to be considered as follows:

1. During the lifetime of the parasite a narrowing of the lumen of the containing vessel occurs, by a proliferation of the lining endothelium, as well as by a compensatory fibrosis of the vessel wall. Both these processes still further impede the lymph flow and bring about a state of chronic stasis, so that ultimately the lumen of the lymphatic vessel may be totally obliterated.

2. It will be readily understood that, with the narrowing of the lumen of the lymphatics, the free passage of the embryos of *F. bancrofti* into the lymph current to the interior of the body is seriously interfered with, so much so that they may become totally arrested during their passage through the lymphatic glands. This is specially the case in those glands which are situated distally to the point of obstruction; at this juncture the embryos may be destroyed, and during their process of disintegration the inflammation and consequent fibrosis of the lymphatic tissue is increased. That is, the embryos, though not pathogenic in the living stage, become so after death.

The fibrosis of the lymphatic glands, to which little attention has hitherto been paid, is one of the most marked features of the pathology of filarial disease, and of elephantiasis in particular. In microscopical sections of the glands this fibrosis can be demonstrated, and the histopathological picture is further characterized by giant cell formation and eosinophile aggregations. Fairley and others have shown that a similar concentration of helminthic toxins occurs at certain focal points in bilharzial disease.

The effects of the toxins produced during the process of destruction of the adult worms, as well as of the embryos, may be more widely disseminated than is at present thought to be the case. One of us (Manson-Bahr) has already shown that even the lymphatic glands proximally situated to the seat of the parasites may show inflammatory changes, thus suggesting a generalized toxic condition.

Let us consider what happens to the embryos produced by a pregnant female filaria in a lymphatic channel the lumen of which is in the process of occlusion. Owing to the inability of the embryos to maintain a separate existence for any length of time in lymph itself, those which cannot escape into the blood stream must ultimately become destroyed, and in the process produce an acute inflammation of the vessels and glands, a condition known clinically as "filarial lymphangitis." The process described above is a vicious one, because it reacts upon the adult worm itself, and probably, in the majority of cases, causes its death. This is shown, first, by the fact that embryos have been observed to gradually disappear from the peripheral blood, after even one single attack of lymphangitis; secondly, by the discovery of the recently dead or dying worms in the inflamed lymphatic glands after an attack of lymphangitis, as in a case under Manson-Bahr's notice in Fiji.

After death the worm becomes calcified and may be recognized as a calcareous mass for many years afterwards. During the process of calcification the now defunct worm acts not only as an obstruction, but as a chronic irritant to the vessel or gland tissue. The stages of the process of lymph stasis by means of *F. bancrofti* or its products are thus, to our minds, complete; and we may trace this pathological process still further till it ends in the highest expression of lymph stasis, namely, elephantiasis.

It will be readily understood that a lymph stasis of this sort takes several years to complete. It may require the blockage, owing to the abundant anastomosis, of several sets of lymphatic vessels and glands before a well established lymph stasis, with consequent production of elephantiasis, takes place. Elephantiasis, a state which may be considered as the expression of a massive infestation with *F. bancrofti*, takes place only after repeated invasions by the parasite, and only occurs as an indigenous disease in those localities where repeated infestation is possible. The foregoing remarks suffice to explain the absence of filarial embryos in elephantiasis, a point so often emphasized by antagonists to the filarial theory of this disease. In answer to their objections, we would once more emphasize that the parasitic cause of the disease is defunct, but its effects upon the tissues of its host are permanent. When embryos are found in elephantiasis cases, as is known to occur, even up to 25 per cent. in heavily infected areas, this simply indicates a reinfestation with adult *F. bancrofti* in some unobstructed lymphatic channel of the body.

The ultimate result of all parasites which cause inflammation of tissues is the production of fibrosis, and this persists long after the disappearance of the specific cause. A familiar analogy may be cited in the case of urethral stricture following gonococcal infection; the gonococcus may have long disappeared, yet the effects unfortunately remain. Would anyone at the present day seriously aver that the gonococcus is not the active agent in 90 per cent. of all cases of urethral stricture with urinary retention? The analogy may be carried further: a small percentage of urethral strictures are due to traumatism and other causes blocking the urethra, just exactly in the same way that the filarial worm is not necessarily the pathological agent in all cases of elephantiasis. It is obvious that a lymphatic blockage may occur from many causes—to quote only a few: surgical removal of the inguinal glands, septic lymphangitis, prevertebral fibrosis, septic absorption from chronic eczema of the legs, may all produce an occlusion

of the lymphatic vessels and consequent elephantiasis of the parts drained by these vessels, and so produce a state which cannot be differentiated from real tropical or filarial elephantiasis.

Fibrotic changes elsewhere in the body may be produced by totally dissimilar agents. We need only mention cirrhosis of the liver, which may be produced by helminthic parasites—schistosoma, clonorchis, etc.—by a spirochaete—*Spironema pallida*—by various toxins such as alcohol, but the ultimate result, the production of ascites and cholaemia, is the same.

The chain of evidence that *F. bancrofti* is the cause of tropical elephantiasis may now be considered sufficiently proved on pathological grounds, but Koch's postulates, which Prout has suggested should be applied, cannot be satisfied, for the simple reason that no laboratory or domestic animal is at present known to be susceptible to the parasite, and therefore such a scientific experiment cannot be conducted. It is also hardly necessary to point out that helminths cannot be compared with vegetable micro-organisms in this respect.

(c) *Statistical.*

It has been aptly said that statistics may be made to prove anything or nothing. Mathematical statements based on statistics—if one knows who did the work on which the statistics are based—may be useful, especially to the mathematically inclined, but, at the same time, they must not be allowed to controvert definitely ascertained facts. We must plead that those who base their arguments upon statistics alone, and have arrived at the conclusion that *F. bancrofti* is not the cause of elephantiasis, have not sufficiently studied the pathology of the disease. Would it not be more advantageous to study microscopical sections rather than statistical tables? We maintain that the account we have already given explains many of the statistical anomalies, as, for instance, the absence of the embryos of *F. bancrofti* from the blood in cases of elephantiasis, and also the distribution of elephantiasis nostras in temperate countries.

Viewing the problem in its broadest aspects, there are certain outstanding features—namely:

1. *F. bancrofti* is a tropical and subtropical parasite, as also is elephantiasis a tropical and subtropical disease. Few will be found to deny that the maximum prevalence of elephantiasis, chyluria, lymph scrotum, hydrocele, etc., corresponds almost exactly with the geographical distribution of *F. bancrofti*, though we admit that more intimate knowledge of the regional prevalence of the parasite is still required.

2. The maximum rate of infestation of a population corresponds closely with the occurrence of elephantoid disease—for instance, how else explain Grenada, a West Indian island, with little or no filarial infestation and a corresponding absence of elephantoid disease, while on the other hand, St. Kitts, another West Indian island, with an infestation rate, demonstrable by microscopical blood examination, of 30 per cent., correspondingly shows a very large number of cases of elephantiasis and other lymphatic diseases?

3. One must emphasize the fact that the embryos of *F. bancrofti* must not be taken as the sole index of the infectivity of the population; their absence from the circulation does not necessarily negative infestation by *F. bancrofti*, because it is well known that in lymphangitis, in many cases of chyluria, in filarial abscesses, and in elephantiasis the embryos are often prevented from gaining access to the peripheral blood. Furthermore large numbers of adult *F. bancrofti* have been found in enlarged lymphatic glands without the presence of the corresponding embryos in the blood. This being so, the filarial disease rate must be almost double that of the microfilaria rate of a tropical population.

In order to arrive at a correct estimation of the filarial index of any population one must take into consideration, not only the number of people with demonstrable microfilariae in their blood, but also those bearing clinical evidence of lymphatic disease without microfilariae. If this point is realized it will be understood that wherever the filarial disease rate is high, there also the microfilaria rate is high in proportion. This has been so sufficiently emphasized in our various contributions to the subject that we need not labour the point further here.

DISCUSSION.

Major BLACK agreed with Drs. Low and Manson-Bahr that statistics were not very reliable as regards the incidence of the disease, and indicated that this unreliability might be due in part to the presence of the microfilaria in the enlarged glands when not present in the blood.

Surgeon Captain BASSETT-SMITH emphasized the great value of clinical and pathological research and suggested that the employment of different technique by the various observers rendered the statistics of little use. He drew attention to the marked eosinophilia as an indication of the toxicity of the parasite, and to the resistance shown by certain cases to treatment with intravenous injections of arsenic and antimony, even over a period of years.

Dr. D. E. ANDERSON inquired whether blood counts had been made with regard to the numbers of the white corpuscles other than the eosinophils. Could difference in race be one of the causes of difference in infection amongst the black people? Had observers noticed that Africans were more liable to filariasis than Indians, or was that a mere accident? With regard to the increase of temperature towards evening, could that be due to the fact that the blood must be richer after the three or four meals of the day than after the abstinence of the night? Was the mosquito net the only explanation of the apparent immunity of the white race? In several cases of elephantiasis seen in Mauritius and Madagascar in the eastern hemisphere and in the West Indies and Columbia in the western it appeared that the descendants of Africans were more affected than those of Indians.

Major-General HEHIR said that in the Calcutta College Hospital, thirty odd years ago, they had a certain number of cases of elephantiasis scroti constantly coming up for treatment, and that, when once the lesion was manifest, it was exceptional to get microfilaria in the surface blood. In that part of India, also, the obstructions appeared to be centred round the bladder and lower abdominal regions. One of the commonest lesions met with thirty years ago was chylocele, in which at times microfilaria were found. Chyluria was also common, and it was, he believed, in this latter condition that the late T. R. Lewis, the discoverer of the *Microfilaria bancrofti*, found it in 1873.

Dr. LAW said that this discussion was useful in bringing out the point that later there might be discovered several new varieties of filaria. In British Guiana there was a total absence of enlargement of the epitrochlear gland. He also drew attention to the work by Dr. Wise, late of British Guiana, published in the *British Guiana Medical Annual*, showing that acute manifestations appeared to be due to the death of the parent worm.

Dr. SPEARMAN asked if the incidence of the disease in men was greater than in women. In the routine examination of bloods at native out-patient dispensaries roughly from 10 per cent. to 20 per cent. of males were found to be infected, while infection in females was rare. He had never seen elephantiasis of the upper arm or breast, nor enlargement of the epitrochlear gland. Elephantiasis of the scrotum was more frequently seen than of the leg. The majority of the infected males were natives of the kingdom of Buganda, who had during the war travelled extensively in the coast belts of British East Africa and German East Africa.

REPLIES.

Professor STEPHENS, in reply, said that his joint paper was not intended to discuss the relationship of *Filaria bancrofti* to filariasis, but merely to draw attention to the discrepancies of statement found in the literature.

Dr. MANSON-BAHR urged the necessity of maintaining a definite standard of work in making further observations on filariasis, in order that any series of observations might be profitably compared. His own observations showed that men in the Pacific Islands were more frequently infested than women, that the ratio varied in different parts of the world, and that this probably depended on the habits of the two sexes in different districts. The same

factor held good for the distribution of elephantiasis in different parts of the body. Those natives who were most frequently infested by way of the arms were those most frequently exposed to infestation in this area; for instance, the Fijians generally worked with bare arms in the fields where *Stegomyia pseudocutellaris*, the intermediary host, most abounded.

Dr. G. C. Low emphasized the importance of persons being properly trained before attempting to do filarial work. Unless this was done many serious mistakes were bound to crop up. He quite admitted that many of the so-called statistics on filariasis were not only valueless but even misleading. One must really know the capability of the worker doing the work before one could use his results in forming statistical tables. The whole subject of filariasis was very difficult and very imperfectly understood by many. Some years ago he had tried to induce some harmony into the results of embryo counting by insisting on a standard measurement of blood being used by all, and suggested twenty cubic millimetres as a suitable amount. Another difficulty in estimating a filarial infection in an island or district was that it was not necessary for infested individuals to show embryos in their blood. One must therefore estimate the embryo rate and the disease rate separately, and this was what he had done in the West Indies. For the embryo rate the general healthy population was taken, and then the population was searched for the different diseases, lymphangitis, chlyuria, varicose groin glands, elephantiasis, etc. To anyone who had worked at this subject in detail the part played by the filaria in the production of elephantiasis and the other filarial diseases was plain.

Answering Dr. Anderson, Dr. Low stated that pure white people were quite as liable to infection as half-castes and negroes; Dr. Daniels had shown that the Portuguese in British Guiana were specially liable, and he (Dr. Low) had seen many cases in white people in St. Kitts. There were still many interesting points which required clearing up in the study of filariasis, both as regards the life-history of the worms and as regards some of the pathological points, and he hoped this discussion would lead others to take an interest in the subject and work at it.

TREATMENT OF HUMAN TRYPANOSOMIASIS AND KALA-AZAR BY INTRAVENOUS INJECTION OF ACETYL-P-AMINOPHENYL STIBIATE OF SODIUM.

BY

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THE recent advances of intravenous therapy with antimony tartrate in tropical diseases, both protozoal and helminthic, have been striking and numerous. Both in trypanosomiasis and kala-azar very considerable progress has been reported, and instances of both diseases which have been cured by this drug have been recorded. The chief objection to the use of antimony tartrate in both these protozoal diseases has been the extremely small doses—maximum 2½ grains (0.16 gram)—which can be tolerated by man and the protracted nature of the treatment, in addition to which the trypanosomes, especially *Trypanosoma rhodesiense*, appear to be especially refractory to its action.

It has been felt for some time that the production of an organic compound of antimony, less toxic to the human body and consequently capable of being exhibited in larger doses and therefore more specific to these protozoa, was eminently desirable.

In 1916 Caronia published an account of the successful treatment of kala-azar in children in Italy by intramuscular injection of acetyl-p-aminophenyl stibiate of soda. The original drug was prepared by the firm of Heyden in Dresden. A supply of this compound was procured by Messrs. Allen and Hanburys in the early months of this year (1920), and the salt has since been modified by them under the name of "stibenyl."

Their main object has been to increase its solubility in water and to eliminate the inorganic antimony the original batches they prepared contained. This has now been done, with the result that "stibenyl" is soluble in ten parts of water and contains 34.3 per cent. of antimony. It can be given in large doses to man—0.6 gram (9.24 grains)—it is easily tolerated, and without doubt it will be found that still larger amounts can be borne without supervention of toxic symptoms.

I have so far treated two cases, apparently with success, with this drug, and the results have been so striking that I venture to make them public at this early stage with the view of bringing this drug to the notice of tropical practitioners and with the aim of securing for it a much more extensive trial by those interested than is at present possible. Its application to the treatment of leishmaniasis may mean much to the whole of the tropical world.

The first case is one of intractable trypanosomiasis (*T. gambiense*):

The patient, originally infected in the Belgian Congo in the early days of 1916, has now been under observation for more than four years. The commencement of his illness was acute, with high temperature, unconsciousness, and subsequent delirium. He had exhibited at various times all the clinical phenomena of acute trypanosomiasis—that is, a generalized adenitis, a circinate rash, and various nervous phenomena. Trypanosomes have been extremely scanty in his peripheral blood throughout. Almost from the onset he proved to be extremely sensitive to tartar emetic; the maximum individual dose he could tolerate was 1¼ grains. On various occasions the symptoms of collapse following injection, even after ¾ grain, were so severe that the drug had to be discontinued. At the end of 1919 his mental and cerebral condition had become very much worse. He was completely prostrated in bed with great muscular weakness and inco-ordination of movement. He developed incontinence of urine and faeces, and this was followed in the early part of 1920 by epileptiform fits, accompanied by screaming, biting of tongue and enuresis. Three of these fits were recorded, the last on March 2nd, 1920. Up to that date he had had during four years: 55 grains of intravenous tartar emetic, 25 grains of soamin intramuscularly, 48 grains of atoxyl intramuscularly (finally discontinued on account of threatening blindness). On March 5th, 1920, injections of stibenyl commenced, first with 0.1 gram working up to 0.3 gram. Injections were given as far as possible on alternate days. Altogether 4.3 grams have been given in this manner. The results have been remarkable; improvement has been progressive, no untoward symptoms following injection have been noted, and he has been able to leave the hospital and go to his home (June 22nd).

Naturally one cannot say at present whether symptoms may not recur in the future, but one is at a loss to ascribe the improvement, save to the drug. Improvement commenced simultaneously with the injection of the drug, and within two months he has had more antimony when given in this form (69.3 grains) than in the whole of the previous four years. Moreover, he has been able to tolerate an individual injection of "stibenyl" at least four times as great as the maximum amount of antimony tartrate he was ever able to bear.

The second case is one of kala-azar in a lascar, diagnosed as such by spleen puncture, recognition and subsequent cultivation of the Leishman-Donovan bodies on May 8th of this year.

The man had been ill, as far as can be ascertained, for the previous three months, with great emaciation and anaemia. Improvement has been striking and rapid since the injection of stibenyl, commencing with 0.1 gram and working up to 0.6 gram. Altogether a total of 2.3 grams have been given; no untoward symptoms have been noted. The temperature fell to normal within fourteen days, and the improvement in his general condition has been remarkable. The spleen, which formerly extended well below the umbilicus, has now receded within the costal margin. The blood condition also shows (June 22nd) remarkable improvement. The haemoglobin has risen from 50 to 75 per cent., the red cells from 3,500,000 to 4,125,000, the leucocytes from 3,500 to 6,000. The mononuclears have fallen from 14 per cent. to 4 per cent. During injection there has been complete absence of any toxic phenomena—no vomiting, nausea, or cough, no precordial pain as is often noted with tartar emetic.

Stibenyl, in the one case in which it was tried, appears to have no effect, curiously enough, on bilharziasis. The patient continued to pass ova with living miracidia after 4.5 grams (68.3 grains). The case was subsequently cured after 16 grains of tartar emetic. Neither had it the least effect in benign tertian malaria in the two cases in which it has been tried.

My best thanks are due to Dr. A. L. Gregg, Medical Superintendent Hospital for Tropical Diseases, and to Dr. G. B. H. Hawes of the Albert Dock Hospital, for the great care they have taken of and the interest they have exhibited in these cases. And I wish to record my

appreciation of the enterprise exhibited by Mr. W. H. McCallum for procuring for me the original samples and still further elaborating this drug.

DISCUSSION.

Professor Nuttall, opening the discussion on Dr. Manson-Bahr's paper, asked why in Italy when the patient was a child intravenous injections of antimony were given into the jugular vein, and whether this method had any advantages. Dr. Manson-Bahr replied that one of the objections of intravenous injection of antimony tartrate in children was the small calibre of the veins, so that it was very useful to know that, as in Italy, the jugular route might be used with impunity. Of course, in fully adult men there was no difficulty, as the median basilic or cephalic veins were so prominent. Sometimes there was a difficulty with fat men, though in these the veins might often be felt by rolling them under the finger. There were no local symptoms after injection when ordinary precautions were used.

Dr. Wenyon asked whether Dr. Manson-Bahr was actually dealing with a case of *T. rhodesiense*. The long duration of four years and the small number of trypanosomes found in the blood seemed to indicate a *T. gambiense* infection rather than a *T. rhodesiense* infection. Further, *T. gambiense* infections were much less virulent, and were more easily treated.

Dr. G. C. Low thought he was able to answer Dr. Wenyon's question perhaps better than Dr. Manson-Bahr, as he first saw the patient on his arrival in England when acting for Dr. Daniels. The patient acquired his infection in the Congo, and there was no doubt that he was a *Trypanosoma gambiense* case. As regards the new antimony salt, it was too early to say much about it. Tartar emetic was very good in most cases, and he (Dr. Low) had reduced the temperature in kala-azar cases with it in as short a time as in Dr. Manson-Bahr's case. One good of the new salt, if its efficiency were proved, would be the possibility of giving a much larger dose in a shorter time and so shortening the period of treatment. So far, in the treatment of one case, it had failed in bilharzial disease, while the tartar emetic given immediately after succeeded. There should be no pain with the intravenous injections of tartar emetic if given properly. He had to give these injections every day or so and had no trouble whatsoever with them. Professor Nuttall's mention of the use of the jugular vein was interesting, but in adults it was hardly necessary, and it would be very awkward if a fit of coughing, as so often occurred, took place when the needle was *in situ*.

Dr. Andrew Balfour asked if Dr. Manson-Bahr had formed any opinion as to how antimony acted in cases of the diseases mentioned. Was the action merely that of a parasiticidal agent, or was it more complicated and obscure? In this connexion it was interesting to note that at present emetine and antimony appeared, as it were, to be running a race for favour in the treatment of such diseases as schistosomiasis and oriental sore. He recently had opportunity of studying the records obtained by certain practitioners in Egypt who had been contrasting the action of emetine and of antimony in bilharziasis. So far it would seem that they preferred the former drug, which appeared to be as efficient as tartar emetic and was more easily administered. Recently, also, Photinos and others had stated that marked success followed their treatment of oriental sore by local injections of emetine hydrochloride. The drug had apparently proved equally valuable in the therapy of American leishmaniasis, the form of the disease in which both skin and mucous membranes were attacked. Now emetine and antimony were very different substances from a chemical standpoint, and it would be interesting to know exactly how they exercised their beneficial action in these conditions, and more especially how the new organic antimony compound acted.

Colonel S. L. Cummins said that Dr. Balfour's remarks appealed to him as he had been asking himself the same question. When contemplating the use of antimony in a case of blastomycosis he thought it well to do a preliminary experiment with a culture *in vitro*. An emulsion of *Blastomyces* in contact with a 1 in 200 solution of sodium antimony tartrate for twenty hours was not killed or appreciably diminished. It was perhaps the case that the drug acted not on the germ but on the tissues around it, so modifying them that the body fluids could get access to the germ and so destroy it.

Lieut.-Colonel Kennedy asked what was the total amount of antimony which it was safe to administer. A case had now come to his notice which had been under treatment for four or five months without reduction in the size of the spleen. The total amount of antimony given in the form of sodium and potassium antimony tartrate was just over 100 grains.

Dr. Manson-Bahr replied that apparently it was not safe to administer more than 2½ grains of antimony tartrate as one individual dose. The point about the acetyl salt was that it could safely be given in four times this dose without producing any serious toxic phenomena. He believed that the action of these drugs was not a direct one, but by reason of the alteration of the blood or serum. With reference to the action of emetine, he had recently seen a case in which a large serous effusion took place into a hepatic abscess, with consequent rapid destruction of the entamoebae and rapid healing of the lesion. This seemed to indicate that it was the effusion of serum which cured the case and not the direct action of emetine. The same might be the explanation of the cure of oriental sore by emetine as recently shown by Photinos (*Bull. Soc. Path. Exotique*). He wished he could explain why tartar emetic killed the bilharzia while this acetyl salt, given in much larger doses and containing therefore a much larger percentage of antimony, did not. Much more work required to be done on the subject before any definite statement could be made.

DIETETIC DEFICIENCY AND ENDOCRINE ACTIVITY, WITH SPECIAL REFERENCE TO DEFICIENCY OEDEMAS.

BY

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The endocrine organs—regulators of metabolism—are profoundly influenced by dietetic defects. This fact has been demonstrated by experimentation on pigeons, guinea-pigs, and monkeys. Animals of these species were fed on six classes of deficient dietaries. The first was deficient in all three classes of vitamines and in suitable protein, and was disproportionately rich in carbohydrates; the second was deficient in B and C vitamines and disproportionately rich in carbohydrates and fats; the third was deficient in B-vitamine and disproportionately rich in carbohydrates and fats; the fourth was deficient in A and B vitamines; the fifth in B-vitamine only; the sixth in C-vitamine only. The effects of these dietaries on the endocrine organs are attributable to three factors operating in varying combinations—namely, (1) deficiency of vitamines, (2) imperfect balance of the food with respect to proximate principles, and (3) the fortuitous occurrence of pathogenic agents in the body. The first two factors came into operation when the first three dietaries were used; they were aided in a proportion of cases by the third factor. The first factor was chiefly concerned in producing the results when the last three dietaries were used; it also was aided in a proportion of cases by the third factor.

All endocrine organs, with the exception of the adrenal glands and the pituitary body, undergo greater or lesser degrees of atrophy and depreciation in functional capacity in consequence of dietetic deficiencies.

The thyroid and parathyroid glands* exhibit a moderate degree of atrophy, most marked in pigeons when vitaminic deprivation is associated with an excess of carbohydrates and fats and a deficiency of protein. In monkeys, on the other hand, vitaminic deprivation alone causes a considerable reduction in weight of the thyroid gland. The

* For the effects of certain dietetic excesses on the thyroid gland see paper by author in the *Indian Journal of Medical Research*, January, 1920.

dietetic deficiencies render these organs susceptible to toxic and bacterial action. In these circumstances the parathyroids often exhibit haemorrhagic infiltration of their substance; the thyroid may be similarly affected. This observation has a bearing on the causation of infantile tetany. In guinea-pigs a scorbutic diet causes the thyroid to enlarge; the enlargement is due to haemorrhagic infiltration of its tissues.

The gonads exhibit pronounced atrophy, most marked in pigeons whose food is deficient in B-vitamine and protein and rich in carbohydrate. In monkeys atrophy occurs, but in lesser degree; it is least when the food while deficient in B-vitamine is well balanced with respect to proximate principles.

The pancreas undergoes pronounced atrophy in monkeys and pigeons, especially when vitaminic deprivation is associated with an excess of fats.

The thymus atrophies intensely in five of the deficient dietaries. I have no data with regard to the scorbutic diet.

The spleen undergoes pronounced atrophy in monkeys and pigeons, especially when vitaminic deprivation is associated with an excess of fats. In guinea-pigs fed on a scorbutic diet the spleen weighs approximately one-half of the healthy organ.

The pituitary body exhibits in monkeys and pigeons a small but definite increase in weight in males but not in females. When, however, monkeys were fed on a well balanced food, but deficient in B-vitamine, the weight of the organ was less than in controls.

The adrenal glands enlarge in consequence of all six classes of deficient dietaries. They are the most susceptible of all endocrine organs to dietetic defects. They enlarge also in consequence of starvation. The character of the enlargement varies, both as regards histological change and adrenalin content, with the character of the deficient dietary. Thus, the enlargement produced in guinea-pigs by a scorbutic diet is due to haemorrhagic infiltration of the cortex, and is associated with a great reduction of the adrenalin content, while in pigeons fed on autoclaved rice and butter haemorrhagic infiltration of the medulla is especially evident, and the adrenalin content is as a rule also subnormal. When the food of pigeons and monkeys is deficient in vitamines and suitable protein and disproportionately rich in starch the adrenalin content of the enlarged glands is high. It is less high and the enlargement is less marked when the deficient food is well balanced with respect to proximate principles. The adrenalin content of the adrenal glands is thus dependent on the quality of the food. It is also dependent on the presence or absence of concurrent infections; such infections cause the adrenalin content to be low.

Oedema — usually hydropericardium — is frequently associated with massive enlargement of the adrenal glands, and there is then in pigeons fed on autoclaved rice a corresponding increase of their adrenalin content. Oedema did not occur (oedematous degeneration of the auriculo-ventricular band of fat excepted) when the enlargement was not associated with a corresponding increase of the adrenalin content. While 100 per cent. of cases of wet polyneuritis had massive enlargement of the adrenals associated with a corresponding increase of their adrenalin content, 14 per cent. whose adrenals exhibited these characters had no oedema. The following are the average weights of both adrenals per kilo of original body weight:

Healthy controls	91.8 mg.
Dry polyneuritis	151 mg.
Wet polyneuritis	292 mg.

The average adrenalin content in both adrenals per kilo of original body weight is as follows:

Healthy controls	0.216 gram
Dry polyneuritis	0.320 gram
Wet polyneuritis	0.524 gram

The addition of fresh butter to a dietary of autoclaved rice lowers the incidence of oedema in pigeons. The protection against oedema afforded by the fresh butter appears to be complete for the first thirty-six days of the experiment. In 29 pigeons fed exclusively an autoclaved rice 8 cases of *wet* polyneuritis and 5 cases of *dry* polyneuritis occurred up to the thirty-sixth day, whilst amongst 29 pigeons fed on autoclaved rice and fresh butter no case of *wet* polyneuritis and 19 cases of *dry* polyneuritis occurred up to the thirty-sixth day, the experiments running concurrently. After the thirty-sixth day the butter used afforded no protection. By the thirty-sixth day the pathological changes in the digestive and assimilative organs, which result from the deficient dietaries, are well established, and may inhibit the assimilation of those substances on which the protection against oedema is dependent. The lowered incidence of oedema is associated with a lowered adrenalin content of the adrenal glands, although an increase in weight of the organs occurs. The following are the average weights of both adrenals per kilo of original body weight in—

Butter-fed healthy controls	69.7 mg.
Butter-fed *dry* polyneuritis	141 mg.
Butter-fed *wet* polyneuritis	216 mg.

It will be noted that in butter-fed pigeons of all three classes the average weight of the adrenals is less than in the corresponding classes in non-butter-fed pigeons. The average adrenalin-content in both adrenals per kilo of original body-weight was in—

Butter-fed healthy controls	0.255 gram
Butter-fed *dry* polyneuritis	0.241 gram
Butter-fed *wet* polyneuritis	0.575 gram

Thus, in contrast to cases of polyneuritis resulting from an exclusive diet of autoclaved rice, no increase of the adrenalin content occurs in pigeons fed on autoclaved rice and butter, except when oedema is present.*

Butter varies in its capacity to protect against oedema in pigeons fed on autoclaved rice. Amongst 20 cases of polyneuritis columbarum produced by a dietary of autoclaved rice, onions, and butter, two cases had oedema, or 10 per cent. The butter used was made from the milk of Indian cows fed on *green* fodder. In another series of 20 cases of polyneuritis columbarum produced by a dietary of autoclaved rice, onions, and butter, seven cases had oedema, or 35 per cent. The butter used was made from the milk of Indian cows fed on *dry* fodder. The capacity of butter to afford protection against oedema therefore varies with the quality of the cow's food. A hypothetical "anti-oedema" substance appears to be derived from green fodder. It is unlikely that the two butters differed materially in their protein or fat content. They differed, however, in their lipochrome content, that made from the milk of cows fed on green fodder being richer in this substance. It is suggested that the hypothetical "anti-oedema" substance may be of the nature of lipochromes.

Cocoanut oil does not contain this hypothetical anti-oedema substance, since the addition of this oil to a dietary of autoclaved rice, in the proportion of ½ oz. per bird, afforded no protection against oedema in pigeons.

Summary.

1. Dietetic deficiency has a profound influence on endocrine activity.

2. All endocrine organs, with the exception of the adrenal glands and the pituitary body, undergo greater or lesser degrees of atrophy and depreciation of functional capacity as a result of dietetic deficiencies.

3. The adrenal glands, and in males the pituitary body, enlarge in consequence of dietetic defects; the former greatly, the latter slightly.

4. The adrenal glands are, of all endocrine structures, the most susceptible to dietetic defects.

5. The character of the adrenal enlargement varies with the character of the dietetic deficiency.

6. The adrenalin content of the enlarged adrenals varies with the character of the dietetic defect; it is in excess of normal when the food is deficient in vitamines, in proteins, and disproportionately rich in starch; it is below normal when the diet is scorbutic, and also when concurrent infections are associated with dietetic defects.

7. Oedema is invariably associated with massive enlargement of the adrenal glands in pigeons fed on autoclaved rice. But massive enlargement of the adrenals is not invariably associated with oedema. This association bears some intimate relationship to the adrenalin content of the enlarged organs: when the content is high oedema occurs in 86 per cent. of cases, when the content is low oedema does not occur.

8. Fresh butter contains some substance which tends to protect against oedema. This substance was not present in a cocoanut oil.

* Kymographic estimations of adrenalin in the enlarged glands confirmed the chemical estimations here given.

9. The hypothetical "anti-oedema" substance in butter has a pronounced influence over the adrenal glands. It appears to exert its protective action against oedema by maintaining their adrenalin content at a low level.

10. Butter varies in its capacity to protect against oedema. This variation is dependent on the quality of the cow's food: butter is richer in "anti-oedema" substance when the cows are fed on green fodder than when they are fed on dry fodder.

CONCLUSIONS.

These observations have a significant bearing on the causation of deficiency oedemas in the human subject.

In an early paper on the pathogenesis of deficiency disease I suggested that oedema was initiated by increased intra-capillary pressure consequent on hyper-adrenalinaemia. More extended experience has caused me to alter my opinion. Recent work on the effects of adrenalin does not support this suggestion. It seems more probable that an excess of adrenalin may reach the kidneys direct and interfere with the normal excretion of urine, thus favouring the retention of fluid in the tissues. A number of closely correlated facts point in this direction. Thus, the adrenals are enlarged in human beri-beri and their adrenalin content is high (Ohno); the urinary output in human beri-beri is small, although in general no disease of the kidneys is present; excess of adrenalin introduced into the venous circulation inhibits the flow of urine (Gunning) and causes retention of NaCl in the tissues (Bulche and Weiss); a channel of communication exists between the adrenal glands and the kidneys, whereby the product of the glands may reach the kidneys without either dilution or oxidation in the general circulation (Cow); finally, a diminution of the flow of urine can be produced by the direct action of adrenalin reaching the kidneys by this route (Cow). Adrenalin thus appears to control the excretion of urine; this being so, it is of great importance to be aware of the fact that adrenalin is in its turn controlled by the quality of the food. Other factors in addition to impaired excretion no doubt play their part in the causation of oedema—impairment of endothelial function with associated alterations in vascular permeability, impaired metabolism of proteins and lipoids, and chemical changes in the tissues themselves—all of which are consequences of the disturbed endocrine function and of the disturbed metabolism which are the outcome of vitaminic deprivation and malnutrition.

DISCUSSION.

Dr. J. BARCROFT ANDERSON asked whether Colonel McCarrison was satisfied that, when he found *post-mortem* deviations from normal in the appearances of the adrenals, such deviation was due to the immediate effects of the defective diets detailed, rather than to extra strain being placed on the adrenals by their having to counteract the effects of the deficiencies in the diet.

Surgeon Captain BASSETT-SMITH said that his work on guinea-pigs with regard to antiscorbutic diet was confirmatory of the work done by Colonel McCarrison, but that, besides haemorrhage, marked fatty degeneration of the cells of the cortex was generally present. Further, he stated that he had found similar conditions in animals suffering from infections of trypanosomes so closely allied that the appearances could not be distinguished microscopically. This, he thought, pointed to a toxic cause.

Dr. WAUGH SCOTT said that he had nothing to contribute to the pathological aspect of this discussion, but that he would like to express his gratitude to Colonel McCarrison for the light thrown on his clinical experience in Malaya. Oedema was extremely common amongst patients in that country, and the cause was often very obscure. Such patients, when put on milk diet usually got worse, and he had found a diet largely composed of fresh vegetables to have a remarkably beneficial action in these cases.

Dr. Low asked what was the condition of the liver in such cases.

Dr. MANSON-BAHR asked Colonel McCarrison if he knew of any observations showing the connexion of so-called war oedema and pellagra. During the early part of 1916 a very high degree of oedema was found amongst Turkish prisoners from Avatra who had undergone great privation and starvation. These cases were at first thought to be beri-beri, but those who recovered developed pellagra. Amongst the German prisoners a degree of oedema was observed by Dr. Enright in association with malaria, but this disappeared after treatment with quinine, while others of these oedematous cases subsequently developed pellagra.

Major-General HEHIR said he should be grateful if Colonel McCarrison would say what was the relationship existing between excessive physical exertion and the acute onset of beri-beri in cases of partial starvation in man.

REPLY.

Colonel MCCARRISON, in reply, said: In regard to the point raised by Dr. Anderson I am, at the present stage of my work, not prepared to give a satisfactory answer. It is a notable fact, however, that the adrenals enlarge at a time when all other lipoid-containing structures atrophy, at a time, too, when the lipoid content of the blood serum is, according to de Longen and Schut, low. The adrenals enlarge in human beri-beri, and their adrenalin content is increased (Ohno). Thus a high adrenalin content is associated with a low lipoid content of the blood, a fact which is in remarkable contrast to the great excess of lipoid, reported by Epstein, in the blood of persons suffering from renal dropsy. The adrenal cortex, if not an actual manufactory of lipoids, is certainly their chief storehouse in the body. It may be that the enlargement of the adrenal cortex is a compensatory attempt to supply a deficiency of lipoids to the blood serum and nervous tissues especially, and that the excessive adrenalin content is a by-product of their activities in this direction. If this were so—and in the present state of my knowledge it is no more than surmise—the adrenal enlargement would be comparable to that of the thyroid gland in the presence of deficient iodine intake or assimilation. Dr. Bassett-Smith has reminded me that I made no mention of the degenerative changes in the cortical cells in the adrenals of guinea-pigs fed on a scorbutic diet. Vacuolation and fatty degeneration of these cells is associated with more or less circumscribed haemorrhagic infiltration of the cortex, and no doubt is responsible in some measure for the low adrenalin output of the organs as a result of scorbutic diet. In reply to Dr. Low, the liver shows little atrophy as determined by weight, but it is often engorged, and its cells degenerated and vacuolated in greater or lesser degree. Vacuolation of cells is more marked when the diet is scorbutic. In fact, the extent of the atrophy of this organ is masked by its engorgement. I have dealt fully with the histopathology of the liver in my Fifth Report on the Pathogenesis of Deficiency Disease to the Indian Research Fund Association, which has been published in the October, 1919, number of the *Indian Journal of Medical Research*. Dr. Manson-Bahr has raised the point of hunger oedema and pellagra. I think that the observations I have mentioned have an important bearing on both these states. And here I may be permitted to emphasize again that the effects on the adrenals, to which I have directed your attention, are the outcome of four factors operating in varying combinations according to the character of the deficiency. Three of these are dietetic and the fourth pathogenic. In practice, when we are dealing with a human dietary which is deficient in vitamines, we are often at the same time dealing with one deficient in suitable protein and disproportionately rich in starch. Both protein and vitamines in sufficient quantity are essential for the maintenance of perfect cellular activity, and it seems to me probable that oedema may be a consequence of a deficiency of either. Certainly with respect to pellagra a deficiency of suitable protein would appear, from the reports of the Pellagra Commission, to be an important factor in the causation. I do not yet know how far the adrenal changes I have recorded have an influence on the specific effects of deficiency of protein, deficiency of vitamines, or both together. With regard to the effects of fatigue in precipitating the onset of beri-beric symptoms, as observed by Major-General Hehir, it may be that this agency exerts its harmful action by further exhausting the resources of the endocrine organs. My studies are, however, still too little

advanced to enable me to provide complete answers to the points raised by the various speakers. Indeed, it would at present be injudicious to attempt to do so. I prefer still to say, with regard to some of them, I do not know.

SECTION OF PHYSIOLOGY AND PHARMACOLOGY.

Professor F. GOWLAND HOPKINS, F.R.S., D.Sc., F.R.C.P., President.

DISCUSSION ON THE TREATMENT OF DENERVATED MUSCLE AND ON THE "DISUSE" THEORY.

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DR. JOHN REID in 1848 put forward the theory that the wasting and loss of irritability of muscle which follows severance of nerves was due to the inactivity of the muscle—the theory later called the "disuse" theory—and that by stimulating the muscle with the galvanic current the wasting could be prevented. In the following year Brown-Séquard supported this theory in its general form, but thought it possible that the galvanic current besides preventing wasting by doing away with the inactivity of the muscles, might also help to prevent it by a direct action on the chemical changes in the muscles. The disuse theory was widely accepted, and it was acted on. It had in its favour the fact that exercised muscles increased in size and that unused muscles decreased in size. In medical practice, however, the electrical stimulation of muscle gave results which were difficult to harmonize with the disuse theory, and from time to time it was urged that the state of muscle after nerve section was different from that caused by lack of use. But those who criticized the theory had no other of a definite kind; the only one suggested was that the atrophy of the muscle was due to cutting off trophic impulses passing to it by the nerve. The trophic theory was too vague to be satisfying, and the disuse theory remained and still remains the dominant one. On the disuse theory, contraction of the muscle when not produced to excess must largely delay the atrophy, and it must, if rightly carried out, entirely prevent any atrophy from occurring.

A theory which has been intimately connected with the disuse theory, but which is not necessarily a part of it, is that the wasting of unused muscle and the atrophy of denervated muscle is caused by the accumulation of metabolic products. Metabolic products may pass out of the muscle either by the lymph or by the blood. Physiological experiment has shown that from quiescent normal muscle there is very little lymph flow and that the flow is increased by contraction and by massage. It has not, however, been shown that in quiescent muscle there is any accumulation of metabolic products to remove. It is a familiar fact that soluble substances injected into a muscle pass almost at once into the general circulation. Ligature of the lymph vessels of the limbs does not so far as is known delay the time at which absorption begins on intramuscular injection. Absorption by the blood vessels one would think would be able to deal with the metabolic products of the quiescent muscle, and the increased lymph flow which occurs in contraction may be regarded as being only a means of meeting the increased production of such products. It is also known that in normal muscle the after-effect of contraction is increased blood flow, and Barcroft and his co-workers have shown that it lasts for some time after the contraction, but there is good reason to believe that the increased blood flow is due to the increase in the metabolic products, and in that case contraction causes for a not inconsiderable time increase of products which, on the theory with which we are dealing, are injurious. It does not, then, seem probable that contraction benefits a muscle by causing the removal of metabolic products accumulated in consequence of inactivity. On this theory indeed the way to get rid of metabolic products is to increase them. Massage increases the lymph flow in normal muscle, and Lauder Brunton and Tunnicliffe showed that it also increases the blood flow. It is probable that it does the same in denervated muscle. It does not give rise to metabolic products as contraction does, so that if there are metabolic products to be removed massage would be more likely than contraction to be beneficial.

We might, however, discard the theory that contraction and massage delay atrophy in muscle by mechanically decreasing metabolic products, and suppose that it delays atrophy in consequence of the increased supply of oxygen resulting in increased blood flow. This possibility presents the primary difficulty that atrophy is very much faster in the first weeks after section of the nerve than later, and that during this period the blood flow, which is at first greatly increased by section of the vaso-constrictor nerves, remains as a rule above normal.

If we discard this theory also there seems no scope for a beneficial action of massage in the early stage of denervation, but we might still assume that electrical currents which cause contraction do so by directly stimulating the growth of the muscle.

The foregoing statement shows, I think, that whilst there is ground for much argument as to the way in which denervated muscle may conceivably be benefited by various forms of treatment, there is little hope that the argument will lead different schools of thought to a common conclusion. We need further facts of observation and experiment.

Both Reid and Brown-Séquard made experiments on animals and from these they concluded that galvanic stimulation completely prevented the atrophy of denervated muscle. The experiments are for various reasons inconclusive, but it would take too much space to criticize them here. The striking fact is that from 1849 to 1915 denervated muscles in man have been generally, though not universally, caused to contract by electric currents on the theory that this treatment prevented or delayed atrophy, without any definite evidence being offered (so far as I have been able to find) of a successful result, and without any further serious experiments on animals. Recently some experiments on animals have been made. I give a short account of them for your consideration.

A fundamental fact with regard to denervated muscle which has long been known, but the significance of which has been overlooked, is that it is not quiescent. It is in continuous fibrillar contraction. The contractions are not synchronous enough or strong enough to move the whole muscle, but the single fibres contract many times a minute without intermission of the rhythm. There is, then, quite as much ground for considering that the atrophy is due to overuse as there is for considering that it is due to disuse. And if it is due to overuse, it is very improbable that making it contract still more can benefit it.

I and my collaborators, Dr. Kato and Dr. Hashimoto, have experimented on rabbits. I need not give in detail the first experiments made by Dr. Kato and myself,[1] for the conditions of the experiments gave considerable scope for variation in result. The animals were not fully grown, the muscles were weighed in groups instead of singly, and the duration of the experiments varied from nine to seventy-one days. The one clear result was that neither moderate contraction, caused by condenser currents combined with brief massage, nor passive movement prevented extensive atrophy of the denervated muscles. Apart from this we came to no conclusion, but we were inclined to believe that both electrical stimulation and passive movement had some beneficial effect.

In order to test the suggestion of some improvement by treatment afforded by the foregoing experiments two experiments were made by me[2] and two later by Dr. Hashimoto and myself,[3] in conditions in which I think the experimental error was small. The results we may take together.

After section of the rabbit's sciatic in the popliteal space, the gastrocnemius and plantaris muscles lose from 30 to about 45 per cent. of their weight in three weeks; the other muscles of the leg supplied by the cut nerves lose as a rule less weight than the gastrocnemius, and the percentage loss varies within certain limits in different animals. The percentage loss was determined by cutting the nerves on one side in 8 rabbits and weighing the several muscles on the two sides. The limits of the normal difference in weight of the several muscles on the two sides was determined by weighing the muscles of 18 unoperated rabbits.

In the experiments on the effect of treatment the popliteal nerves were cut on both sides. The muscles of one side underwent treatment, and at the end of three weeks or rather more the animals were killed and the several muscles weighed. It was necessary to determine whether in bilateral denervation the corresponding muscles lost weight at the same rate. For this purpose the external or internal popliteal nerves were cut in 6 rabbits, and in three weeks or rather more the animals were killed and the muscles on the two sides weighed. The differences in the weight of corresponding muscles was in some cases rather greater than in unoperated animals, but the results as a whole showed that corresponding denervated muscles lost weight at practically the same rate.

It follows, I think, from these data that if, after bilateral denervation lasting three weeks with treatment on one side, the differences in weights of corresponding muscles is nearly the same as in normal animals, we may safely infer that the treatment has caused little if any delay in the rate of atrophy. It may be noticed that in each experiment seven or eight muscles or groups of muscles were compared; the total number of muscles compared was thirty.

In Experiment 1 the lower leg on one side was stimulated with condenser currents for an hour and a quarter each morning and evening for twenty days, at the rate of about 30 a minute. The stimulating electrode was moved from muscle to muscle to avoid fatigue. The different muscles were stimulated to very unequal extents, so that one or other would contract the optimal number of times. In Experiment 2 the passive movements of flexion and extension of one leg were carried on for half an hour twice a day for eighteen days. In Experiment 3 similar passive movements were carried on for an hour and a quarter twice a day for twenty days. In Experiment 4 the muscles were massaged for half an hour twice a day for fifteen days.

The results did not bring out any definite effect of the treatment. It may safely be said that in all the experiments the gastrocnemius on the treated side lost at least 35 per cent. of its weight. The difference in the weights of the muscles on the two sides was in some cases outside the normal limits, but the variation was not great enough to allow any certain deduction to be made from it; so far as the results went they indicated trifling damage from contraction, and slight benefit by passive movement and by massage.

A considerable number of experiments have been made by Hartman, Blatz, and Kilborn.[4] In 37 rabbits they cut on both sides the nerves to the gastrocnemius, plantaris and soleus muscles. The muscles were massaged by trained masseuses for two to ten minutes a day over periods varying from seven to 190 days. At the end of the period the animals were anaesthetized, the muscles stimulated, and the work done by them on the two sides compared. The muscles were also weighed. Control observations were made on fifteen normal rabbits. The differences which they found on the treated and untreated side were insufficient to warrant any certain conclusion, but so far as they went they indicated that massage was slightly beneficial.

Further experiments have been made by Hartman and Blatz.[5] In these the contractile powers of the muscles of the treated and untreated side were tested from time time after denervation instead of only at the end. The animals were anaesthetized with ether, the leg fixed, weights attached to the foot, and a tracing taken of its movements. The treatment was massage on 58 rabbits for two to twenty minutes' duration daily, and stimulation by the galvanic current in 24 rabbits. The strength of the current used varied in different cases. In these experiments they state that neither massage nor galvanic stimulation appeared to benefit the denervated muscle.

The experiments of myself and my collaborators deal with the effect of treatment on the atrophy of muscle, those of Hartman, Blatz, and Kilborn deal with its effect on contractile power; since in neither was any certain benefit found, it is eminently desirable that treatment in man should not be governed by theoretical conclusions, and that the effect of treatment should be observed with an open mind.

There are one or two other points on the treatment of denervated muscle which deserve mention. It is known that in such muscle connective tissue readily forms. This tissue when first-formed is jelly-like, and I agree with those who think it important that passive movement should be carried out at the earliest possible moment, in order to stretch this tissue and prevent adhesions of the muscles and joints. The theory that muscle is injured by moderate extension and flexion is I think erroneous; such injury may occur when parts of the muscle are so fixed by connective tissue that stretching breaks the muscle fibres.

In the later stages of denervation the blood supply to the muscle probably diminishes, and in that case it seems reasonable to suppose that an increase of blood supply will benefit it. A simple and effective way of doing this is the warm bath commonly used. Whether any other treatment is necessary is, I think, doubtful, but as an additional measure I think there is more to be said for massage than for electrical stimulation.

In comparing in man the behaviour of treated and untreated muscles it has to be borne in mind that all the tissues in a denervated area are more liable to injury than a normal area. Continued pressure and excessive strain cause connective tissue growth and injure the tissues so that inflammation occurs. In consequence, patients who are left to their own devices cannot properly be compared with those who are prevented from injuring themselves. Further, any kind of treatment which does not injure is advantageous, since it produces confidence in the patient and thereby improves the general nutrition of the body, and this it can be hardly doubted affects the denervated part.

In conclusion I may say that I regard the treatment of denervated muscle as still in the experimental stage, and it is from this point of view that I introduce a discussion on the question.

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IN the observations which I am about to make I shall understand by the term "denervated muscle" a muscle the nerve of which has been deprived of its functions by injury or disease. Professor Langley regards the treatment of denervated muscle as still in the experimental stage. I think that those who have had no practical experience in the electrical treatment of paralysis, will also conclude, after reading the experiments described by Professor Langley, that electricity is of little or no value in the treatment of denervated muscle. I feel sure that this is not the conclusion of those who have had long experience in the electrical treatment of paralysis. The following statements are quoted from the late Dr. Lewis Jones, whose knowledge of the subject was wide. He said: "It is perhaps hardly necessary to debate the question whether electrical treatment is of use in the treatment of paralysis. But if there are any persons who still dispute the efficacy of electricity and try to maintain the proposition that the recovery from paralysis is due to natural causes and is quite independent of any electrical treatment which may be used during the course of recovery, the following cases may be quoted." He then gave particulars of two cases which were stationary when the electrical treatment was interrupted, but progressed again when the treatment was resumed. In one case the paralysis was due to pressure on the nerve; in the other case the nerves had been divided and afterwards sutured. Dr. Lewis Jones also said: "All those who have had practical experience in the matter have seen cases of nerve injury begin to recover rapidly under electricity, after having been stationary for long periods under 'expectant treatment.'"

A case under my care illustrated this most strikingly. The patient acquired infantile paralysis of both lower limbs at the age of one year. The right limb soon regained power and returned to a normal state. The left thigh regained slight power, but the left leg remained paralysed for six years. No treatment other than the application of a splint, and a form of massage by the nurse, was applied. Electrical treatment was then commenced. After 36 applications during 11 weeks, slight voluntary power was noticed in the peronei. The girth of the leg increased by one inch. The treatment was continued and power returned in the extensors of the toes and in the peroneus tertius. The form of electrical treatment in this case was the rhythmically varied sinusoidal alternating current, applied to the limb immersed in water. This current does not cause visible contraction of muscles showing the reaction of degeneration. This method has been used for many years at St. Bartholomew's Hospital for the greater number of cases of paralysis in which the muscles show the reaction of degeneration. The use of a current which does not cause contraction of these muscles is, according to the original teaching, of no value. The fact, however,

remains that return of voluntary power has frequently been noted in muscles which have been long paralysed and have shown the reaction of degeneration, after treatment by the sinusoidal current has commenced. With regard to its mode of action it is possible that the stimulation of the peripheral sensory nerve endings in the skin stimulates the anterior horn cells. If the axons of these cells have been divided this stimulation may hasten the regeneration, or if the axon has temporarily lost its function through disease its recovery may be hastened. I have been able to stimulate the posterior nerve roots of the spinal cord in the lumbar region of the human subject and cause contraction of the muscles of the lower limb, the contraction occurring in the muscles of the *opposite* side.

My experience shows that a paralysed muscle showing the reaction of degeneration will recover (if recovery is possible) when a current causing no contraction is applied to the limb, and recovery has taken place in cases in which no progress had occurred before the treatment. A patient who had paralysis in both forearms was under my care at St. Bartholomew's. One side was treated by the sinusoidal current, the other by the galvanic current. Recovery commenced first on the side treated by the sinusoidal current in which muscular contraction was not produced. After voluntary power is regained, currents which cause contraction should, I think, be used, provided that their application is not long enough to cause fatigue.

Another important precaution should be taken, namely, the protection of the limb from cold. It is well known that cold greatly retards recovery. I do not think that any form of physical treatment will prevent loss of weight of a muscle after section of its nerve. This loss of weight was clearly shown in Professor Langley's experiments. The failure of electrical stimulation to prevent this loss cannot, I think, be taken as indicating that electrical treatment is of no value. The divided nerve should have been sutured and the treatment continued in some of the muscles till power returned. The value or absence of value of treatment by electrically induced contraction would then be ascertained.

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I FEEL sure that all electro-therapists will most heartily welcome Professor Langley's paper. Nothing is more desired by the modern school of electro-therapists than a closer association with the experimental physiologist, for important problems continually arise in their work which can only be satisfactorily worked out in the physiological laboratory. The association would, I think, be mutually helpful, for only by working in collaboration with the electro-therapist can the physiologist ascertain the nature of the questions awaiting solution.

Professor Langley's experiments on rabbits appear to contain little or nothing that is at variance either with the experience or the teaching of electro-therapists in regard to the treatment of peripheral nerve injuries. For the period with which he deals is one with which electro-therapists have little or no experience. His experiments are concerned with the period extending for three weeks after the date of the division of the nerve—namely, with that period during which the nerve is in process of degeneration, and ceasing when complete degeneration has occurred. During the war it was exceedingly rare for a case of nerve injury to pass into the electro-therapeutic department within three weeks of the receipt of the injury, therefore electro-therapists were unable to treat these cases during the period with which Professor Langley deals.

In the treatment of the peripheral nerve paralysis consequent upon anterior poliomyelitis, in some respects an analogous condition, most electro-therapists are agreed that for the first three or even six weeks from the onset of the disease electrical excitation should not be employed, as in the acute condition it is likely to do more harm than good. So to this extent electro-therapists would seem to be in full accord with Professor Langley. Almost invariably complete nerve degeneration has occurred and the reaction of degeneration is fully established before cases of nerve wounds come into the hands of the electro-therapist. These two periods—the period during which degeneration is taking place and the period after degeneration is fully established—are so essentially different in character that it cannot, I think, be seriously argued that the treatment which is suitable for one is necessarily suited to the other.

The fact mentioned by Professor Langley that "atrophy is very much faster in the first weeks after section of the nerve than later" would seem to point to nerve irritation occurring during this period of active degeneration; for we frequently observed during the war that in those cases in which constriction or the pressure of a foreign body caused nerve irritation, the muscular wasting was far greater than in cases of complete nerve section. I should be interested to hear from Professor Langley whether fibrillar contraction is greater during this period; one would expect it to be so if there was much nerve irritation. If nerve irritation exists, as appears to be the case, during the first three weeks following nerve section, electrical stimulation would be clearly contraindicated during that time. To this extent, then, I think that I should be safe in stating, and I believe most electro-therapists would be in accord with the statement, that there is nothing in Professor Langley's experiments, so far as they go, with which we are in disagreement; but when full degeneration is established, and when nerve irritation is a thing of the past, an entirely different problem arises to which Professor Langley's experiments do not necessarily apply.

When all nerve irritation has ceased we claim that by suitable electrical treatment, not necessarily by exciting contraction, we can favourably influence the healing of the wound, heal trophic sores, improve the condition of the skin, replacing its dry, scaly, harsh condition by a state more closely approaching to the normal; we claim also that we can aid the nutrition of the limb by accelerating its circulation and by increasing its temperature. Thus, though we make no claim to affect regeneration of the nerve directly, we must nevertheless influence it by inducing in the limb a condition more favourable to regeneration. Upon these points there is a unanimity of opinion among electro-therapists almost unheard of among any other section of medical men. But these are not merely subjective symptoms favourably interpreted by an enthusiastic electro-therapist. Actual measurements of the limbs showing increase in girth, a reappearance of the growth of the hair on the skin, diminution in the milliampèrage of the galvanic current required to excite a contraction, the increased formation of callus in ununited fractures, domonstrated radiographically by Dr. Barclay as taking place after suitable electrical treatment, are objective signs which admit of no other interpretation than that the nutrition of tissues, lowered by injury or disease, can be improved by modern electrical methods.

I am in agreement with Professor Langley in the opinion he expresses that "there is little hope that argument will lead different schools of thought to a common conclusion." I would even go further, for I fear there is little hope that even experiments on animals will bring about this desirable result. For, as it is open to physiologists to say that the claims of electro-therapists are too vague and inexact, and should be reduced by experiments on animals to terms of grams and metres; so it is open to electro-therapists to express the view that experiments on animals, conducted in a laboratory, are not so valuable as observations based on the treatment of thousands of soldiers made by or under the direct supervision of skilled and experienced physicians. And also it is open to the massage expert to claim that the massage of rabbits' legs has not attained to the same degree of perfected technique as the massage of human limbs by highly trained military masseuses; and, consequently, no reliable conclusion could be drawn from the failure of the former in regard to the efficacy of the latter.

I should like very briefly to allude to the question of the relative value of massage and electricity. Let me very emphatically state that in my opinion there should be no question at all of their relative efficiency, and certainly no rivalry between their respective exponents. They are in no sense antagonistic, on the contrary the one is the complement of the other, they are mutually useful, and in a large number of cases each is indispensable. In dealing with massage, I would like also to emphasize the very great importance I attach to remedial exercises and re-educative movements in the recovery stages of nerve lesions.

F. HERNAMAN-JOHNSON, M.D.,
Radiologist to the French Hospital; Honorary Physician to the Electrical Department of the Margaret Street Hospital for Consumptives, London.

PROFESSOR LANGLEY'S experiments, taken at their face value, prove that electrically provoked contraction cannot prevent the initial atrophy of muscles after nerve severance. But they do not carry us beyond the first month. I am convinced, on clinical grounds, that a muscle severed from its nerve supply soon ceases to be a normal muscle, and arguments concerning the danger of disuse and the value of electrically provoked exercise cannot be applied to it without modification. The value of rest and relaxation in the case of muscles with a seriously damaged nerve supply was shown many years ago by Sir Robert Jones. His school, however, made the error at one time of condemning, or at any rate of looking askance at, electrical treatment *in toto*. Clinically, I have found that for many weeks, sometimes for months, after nerve injury treatment of the limb in a warm bath, by some form of interrupted current not strong enough to produce visible contractions, is of great value. This is the same treatment as that adopted at St. Bartholomew's Hospital by Dr. Cumberbatch in certain cases of infantile paralysis, for which he claims great success.

I would divide the treatment of a muscle with a severed and sutured nerve into three stages:

1. It should at first be kept at rest and prevented from being overstretched by relaxation splint. This need not, however, in turn overstretch the sound opponents, nor does it preclude daily removal for full passive movements of the joint and very gentle massage. Electrical treatment at this stage should not produce visible contractions of any muscles.

2. As soon as it can be detected, either by electrical tests or by slight return of voluntary power, that motor nerve regeneration has become in part established, the muscle should be made to contract as a whole, preferably by some form of tetanizing current. Such a current, consisting of a rapid series of condenser shocks, may be used long before there is any response to ordinary faradism. This treatment should at first be given while the limb is still on its splint, and the greatest care should be taken to prevent over-fatigue. There is some tendency at present to forget the value of rest and the danger of over-stimulation. This will soon cease to matter as regards war injuries, but may have disastrous consequences as regards the treatment of infantile paralysis.

3. The final stage, when voluntary power is rapidly returning.

The splint may now be dispensed with, and fairly vigorous daily stimulation for a few weeks will hasten the full restoration to normal.

It would be interesting if Professor Langley could tell us how long the fibrillar contraction which takes place in denervated muscle continues—that is, when the nerve is sutured and regeneration takes place normally. If, as he says, the atrophy of the muscle is an over-use, and not a disuse atrophy, the theoretical argument against provoking mass contraction so long as that of the fibrils continues is very strong.

In conclusion, I should like to say that, in concerning ourselves with the treatment of denervated muscle, we must not forget the nerve upon which the ultimate restoration to normal depends. In the case of an ideal operation, when a clean end-to-end union is made in the absence of sepsis or old scar tissue, perhaps little can be done electrically. But even here we must remember that in certain cases the normal rate of growth can be increased by electrical means. When, however, there is any risk of scar tissue pressing upon the new-made junction, the application of *x* rays or radium at the site of injury appears to be called for in theory, and has, in the opinion of many competent witnesses, justified itself in practice.

E. D. ADRIAN, M.A., M.D.,
Fellow of Trinity College, Cambridge.

If electricity acts merely as a suggestive remedy, it should be possible to find something simpler, cheaper, and more impressive. But everyone who prescribes electricity believes that it causes a definite improvement in the muscle apart from its psychical effects. Electrotherapists say they are unanimously in favour of the application of electricity, but there is by no means an agreement as to the form in which it should be used. For example, Dr. Cumberbatch recommends us not to cause muscular contractions, but to rely upon the sensory stimulation produced by the current. This is surely not the general view; it is usually believed that contractions should be produced, and this form of treatment may well be beneficial, even though it does not delay the muscular atrophy. One would expect electrically induced contractions to maintain the muscle fibres in good mechanical conditions, freeing them from adhesions resulting from the overgrowth of connective tissue. In this respect electrical treatment should be more effective than either massage or passive movements. In the experiments of Hartman and Blatz and Professor Langley, large muscles have been used. In these cases, as in cases of dropped wrist in man, the movement of the antagonistic muscles produces sufficient massage to keep the denervated muscle in good mechanical condition. But smaller muscles, for example, of the hand, do not suffer so much passive movement when their antagonists contract, and are much more likely to suffer by adhesions, and to be benefited by electrically induced contractions.

NOEL H. M. BURKE, M.R.C.S., L.R.C.P.,
Late Clinical Assistant in the Electrical Department, St. Bartholomew's Hospital.

IN Professor Langley's experiments the treatment was drastic, and was limited to a period of three weeks. No one can prevent the preliminary wasting, but we feel we can prevent later wasting. The rabbit may be able to tell us. Regimen, diet, etc., do not account for the different results obtained in man and animals, because under the same regimen men who were treated got on better than men who were untreated. The problem is complicated, for not only must the muscle be thought of, but other considerations, of temperature, skin, adhesions, pain, etc. must be taken into account. Treatment in the early stage should aim at (1) preventing unnecessary loss of condition and (2) hastening the healing of the wound in the nerve. Treatment in the later stage should be first to keep the general condition good, and possibly and probably to hasten regeneration. For treatment in the latest stages, at and near the return of voluntary power, exercise, electrically provoked, and otherwise, is the really useful thing, together with re-education. For the two earlier stages non-contracting treatments are right, uninterrupted galvanic currents for chemical action, and rhythmic sinusoidal for chemical action and reflex action, etc. In the last stages exercising methods are required. With regard to the inactivity theory I agree that it is wrong, and am glad that Professor Langley has said so too.

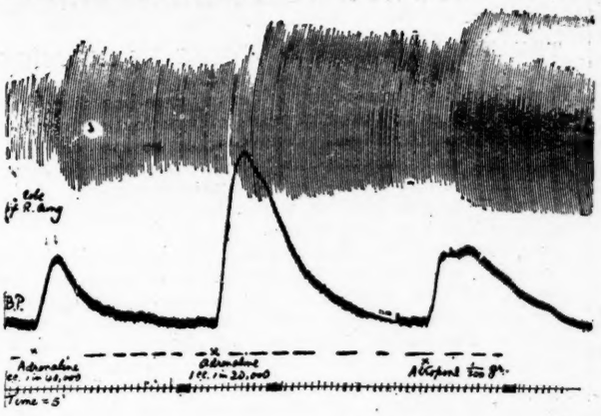
FF. ROBERTS, M.D., M.R.C.P.,
Fellow of Clare College, Cambridge.

AGREEMENT has been obtained on the effect of stretching on denervated muscles. It is the unanimous opinion of surgeons that stretching has a bad effect. On cutting the sciatic nerve in a rabbit there is more extensive wasting of the tibialis anticus than of the gastrocnemius owing to the fact that the normal position of the rabbit's foot is one of relaxation of the tibialis anticus. Professor Langley's negative result can possibly be explained by the fact that stimulation of one group of muscles causes stretching of the other. During the war several factors tended to make the electrical treatment unsatisfactory: (1) the migration of patients from one hospital to another, and (2) careless administration. But we cannot always ascribe the beneficial effects observed to the induced muscular contractions since the treatment involves other factors which operate incidentally. There are, first, the psychological effects, and secondly, the prevention of fibrosis and improvement of nutrition by the active movements during the growth of the nerve.

DEMONSTRATIONS.

A DEMONSTRATION was given by Professor W. E. Dixon on the action of adrenalin on the bronchioles. The quantity of air entering the middle lobe of the right lung and the blood pressure were measured in a decerebrate cat and are

seen recorded in the tracing. Two injections of adrenalin were given; the effect of each was to increase the volume of air entering the lung as the result of dilatation of the



bronchioles and to cause a rise of blood pressure. The effects were temporary. The third injection was atropine, which produced permanent and maximal broncho-dilatation by paralysing the broncho-constrictor nerves, and increased cardiac rate, and therefore blood pressure, by paralysing the cardiac vagus.

RUPTURE OF VEIN OF DERMOID CYST:

INTRAPERITONEAL HAEMORRHAGE: OPERATION: RECOVERY.

BY J. O. BEVEN, M.A., M.R.C.S.,

CAIRO.

THE following case is of interest as illustrating a cause of intraperitoneal haemorrhage which must be of considerable rarity, since no mention of it is made in the works on gynaecology with which I am familiar.

A married woman aged 29 was seized with severe abdominal pain at about 7 p.m. on November 24th, 1919. She had been quietly walking home from a friend's house when the pain came on very suddenly, at first on the right side, but soon becoming more general. There was a history of a similar attack in June, 1917, when nothing abnormal was detected in the pelvis, and neither renal or appendical trouble had been suspected. She was kept under close observation, but the trouble cleared up, and by July 10th no sign of it remained. She had had a much milder attack in October, 1918, but had not called in a medical man. She had two children, aged 4 and 2. The first labour was a very difficult occipito-posterior, which had called for forceps delivery, and had resulted in extensive laceration. Recovery had been satisfactory, and there was no history of obstruction to labour. In November, 1917, there had been a miscarriage at the seventh month, brought on by the shock of seeing an aeroplane smash. The menstrual history was suggestive. She had been regular till October, when the period had come on ten days late and been very scanty. The November period, also late, had begun the previous day, and was also scanty. When I saw the patient (at 3 a.m.) she was markedly blanched, and in very great pain. There was no air hunger or restlessness; she lay very still, moaning with pain. The temperature was 98° and the pulse 80. There was no distension, but movement was limited, and the lower half of the abdomen was extremely tender and rigid. I could detect no dullness, but the tenderness was too great to allow of thorough percussion. On vaginal examination I found the cervix low, not softened, and the fornices distinctly "boggy." No tumour was palpable, and the uterus, as far as the difficulties of the examination allowed me to judge, was not enlarged. The gloved finger had a little blood on it. The patient retched and vomited after the examination, the vomit containing about half an ounce of bright blood, which I disregarded as being probably pharyngeal.

The sudden onset, combined with the very extreme pain and tenderness, pointed to haemorrhage into the peritoneal cavity, which together with the rather suspicious menstrual history, strongly suggested a ruptured ectopic gestation. On the other hand, the history of the two previous attacks had to be taken into account; if they had been appendical, the present trouble might be due to the rupture of an appendix abscess, though this did not seem very likely. Neither the history nor the signs suggested a perforated ulcer, gastric or other. There was no reason to suspect an ovarian tumour as the cause of the mischief, since none had been discovered at previous examinations, or was palpable now.

In view of all this, I diagnosed a ruptured ectopic gestation, gave morphine gr. ¼, and ordered absolute rest, and an ice-bag over the hypogastrium. Seen early next morning with Mr. F. C. Madden, F.R.C.S., the patient's condition was much the same, but the pulse had risen to 96. The morphine had not given much relief. Mr. Madden agreed with my diagnosis, and it was decided to move the patient into the Anglo-American Hospital, Cairo, for operation at once. Morphine was given again, and the eight mile journey in an ill-sprung ambulance was well borne.

As soon as the patient had been prepared and given saline by the rectum, Mr. Madden operated (4 p.m.)

A median subumbilical incision revealed the peritoneal cavity full of blood and clot. On clearing some of this away, a dermoid cyst of the right ovary, the size of a polo ball, was found and delivered. The tumour involved the whole ovary, and the right tube was seen running on the side of the cyst. The long pedicle contained a number of large veins, and near the base of it were three transverse tears. The upper and lower of these were superficial, but the middle one, about an inch long, had opened a vein, from which the haemorrhage was seen to proceed. This vessel was with difficulty secured, as it ran directly into the folds of the broad ligament. The pedicle was finally transfixed near its base, and the tumour removed. The adnexa on the left side were normal.

The cyst showed no signs of torsion beyond the tears in its pedicle, and contained the usual grumous fluid, and rudiments of hair and teeth.

Beyond a little difficulty with the bowels on the fourth and fifth days, the patient made a rapid and uninterrupted recovery.

The striking points of the case are the rare nature of the accident, the rather close way in which the history simulated that of an ectopic gestation with rupture, and the fact that three labours had been passed through without the cyst giving rise to trouble, or even being discovered. This last was probably due to its free mobility and the length of the pedicle.

The two previous attacks of pain were probably caused by slight torsion. The coincidence of the catastrophe with the menstrual period is what one would expect, but apart from this it is difficult to assign any cause for the very acute torsion which must have been required to rupture the pedicle in the manner described. There was no history whatever of violent exercise or a sudden strain. Whether a varicose condition of the veins in such a situation has been described, or ever exists, I do not know. It seems unlikely. In any case the rupture of a vein *per se* would not account for the three tears found at operation.

My thanks are due to Mr. Madden both for his help and for most kindly supplying me with details of the patient's previous illness and confinements.

LIGATURE OF THE FIRST PART OF THE RIGHT SUBCLAVIAN ARTERY FOR TRAUMATIC ANEURYSM OF THE SECOND AND THIRD PARTS.

BY

D. W. HUME, M.B., B.S.LOND., F.R.C.S.ENG.,

MEDICAL SUPERINTENDENT AND SENIOR SURGEON, MINISTRY OF PENSIONS HOSPITALS, EXETER.

EVEN in the recent war, in which almost every conceivable injury due to direct violence has been met with, lesions of the subclavian artery, requiring ligation of the first part of the vessel, seem to have been comparatively rare, and possibly on this account there is some justification for the publication of this case.

The lesion was accompanied by damage to the brachial plexus, either directly or by concussion, and the later history of this damage is not without interest.

Private B., aged 20, was hit by a piece of shell between the vertebral border of the right scapula and the spine at the level of the third dorsal vertebra, at Arras on April 22nd, 1917. The missile made its exit by a small wound about one inch above the junction of the middle and outer thirds of the right clavicle. The patient was sent to England and reached the base hospital on May 19th with the wounds mentioned soundly healed.

He stated that he had coughed up small quantities of blood for about a fortnight after his injury, and he complained of pain in his chest occasionally, and severe pain and loss of function in his right arm. His voice was hoarse, his right pupil distinctly larger than his left, and his right hand and fingers presented trophic lesions. His arm hung limply at his side and he was unable to move it; wrist-drop was, of course, present. There was considerable wasting of all the muscles of the limb, and this increased while he was in hospital. He had no cutaneous sensibility in the forearm and hand, and only a very limited amount over the upper part of his arm.

There was a small swelling immediately above the middle of his right clavicle, but no pulsation could be felt in it at first. The pulse at the right wrist was, however, considerably weaker than that at the left. The swelling increased in size fairly rapidly, and pulsation could soon be felt in it. With the increase in size there was diminution in the strength of the radial pulse, and increase in the severity of the pain in the right arm.

Firm pressure on the inner side of the swelling, directed backwards against the transverse processes of the lower cervical vertebrae, produced complete cessation of pulsation in the swelling and loss of the radial pulse. There was no evidence of haemothorax.

Operation.

On June 6th, 1917, an incision resembling the letter J was made, the vertical limb being along the lower two-thirds of the anterior border of the sterno-mastoid, and the curved part being directed outwards, so that resection of the clavicle might be performed if found necessary. The sternal head of the sterno-mastoid was divided about one inch above its attachment, so as to allow of suture at a later stage; it was necessary to divide also a few fibres of the clavicular head of the muscle. The divided portions were kept out of the way by means of tissue forceps.

The anterior belly of the omohyoid muscle was next identified, but not divided, and the common carotid artery was easily found and followed downwards, the internal jugular vein being carefully separated from the vessel and retracted outwards. The vagus nerve was also identified and retracted outwards with the vein.

After some further dissection, the bifurcation of the innominate artery was reached, and it was observed that this point was quite three-quarters of an inch above the inner end of the clavicle, and that the subclavian artery took an upward course before turning outwards to pass behind the scalenus anticus muscle. Possibly the high position of the vessel was due to the presence of the aneurysmal sac behind the muscle, but the site of bifurcation was certainly higher than was expected. A floss silk ligature was easily passed round the artery from below upwards, and when it was tightened all pulsation in the sac ceased. The loop of the ligature was divided, and the vessel was gently tied in two places close together, so as not to divide the tunica intima. The sac of the aneurysm involved both the second and third parts of the artery. It was not necessary to divide the infrahyoid muscles, as these were readily retracted inwards.

The wound was closed in the usual way, after suture of the sterno-mastoid muscle, with catgut, and a small drainage tube was inserted in its lower end.

The operation was not so difficult as was anticipated, but the spare condition of the patient was, no doubt, a very valuable help.

Recovery was uneventful, and there was never any sign of gangrene. The patient was sent to a convalescent hospital, where electrical treatment and massage could be obtained for his paralysed arm, on August 11th, 1917. There was no pulsation in the sac of the aneurysm, and no pulse at the right wrist.

He returned on November 15th with no signs of recovery of his arm; and electrical treatment and massage was continued until January, 1918, when it was decided that the brachial plexus should be explored. Three days before the date fixed for this operation, the patient stated that he could move his fingers, and this proved to be the case. He was therefore brought before a medical board in February, and was discharged as an invalid on February 25th, 1918.

A letter from him in November, 1918, stated that he could move his arm in all directions, and he could put his hand on the top of his head. He could also move his wrist and thumb and first finger, and sensation had returned to these parts. His head movements were normal. He was seen in April, 1919. The movements of the arm and forearm were then normal. Sensation was natural over the arm and forearm, except over the lower third of the area supplied by the ulnar nerve, where it was diminished. There was wasting of the thenar and hypothenar eminences, and some interference with the function of the ulnar lumbricals and interossei. He was able to write, and stated that the movement of his fingers and the sensation in the area mentioned were improving.

I desire to acknowledge my indebtedness to Colonel Carless for his valuable advice and assistance at the operation on this case.

DELMAS reported recently to the Medical and Biological Society of Montpellier a case of some practical interest. A woman who had had three abortions again became pregnant. The serum reaction in her case was negative, but it was positive in her husband. She received a course of neo-salvarsan and gave birth to a healthy infant.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF GALL STONES BY INFUSION OF PARSLEY.

THE following case recently under my care has struck me very much: A lady over 70 years of age had suffered for many years from gall stones, with severe colic and jaundice. In November, 1918, she had a prolonged attack in which she was reduced to the lowest extremity. In the region of the gall bladder was a large palpable mass in which gall stones could be felt.

On November 9th, 1918, she was seen in consultation by a surgeon, who had seen her several times before, and had always advised operation. He recommended operation now as the only possible chance, and with this opinion I agreed. The patient was most strongly opposed to undergoing any operation, and quoted the case of a friend who had been cured when in a similar condition by drinking infusion of parsley. She began using this, taking about 1½ pints daily of an infusion made by soaking a good double handful of fresh parsley leaves in cold water, which was afterwards brought to the boil, strained, and allowed to cool. To put it shortly, this treatment, persevered with practically ever since, seems to have cured her. She remains free from pain and sickness, and the mass felt in the region of the gall bladder has disappeared. She is no longer emaciated, and the general condition is satisfactory.

The whole case is most striking, and it would seem that the improvement must certainly be the result of the treatment, for practically nothing else was done.

Common garden parsley (*Apium petroselinum*) is not mentioned in the *British Pharmacopoeia*, but it occurs in the French *Codex medicamentarius*, where it is inserted along with garden celery (*Apium graveolens*), apparently because with three other aromatic plants they are used for making a diuretic compound called *sirop des cinq racines*. The fruit of parsley, and apparently also the whole plant, contains an essential oil, which is pretty well known under the name of "apiol" as a remedy for dysmenorrhoea. "Apiol" is in most of the pharmacopoeias, but the French pharmacopoeia directs crystallized apiol (the stearoptene from the oil) which is known also as white apiol and sometimes as parsley camphor. I can find no mention of parsley in the many infusions and decoctions given in Buchan's *Domestic Medicine*. In one edition of Squire's *Companion to the Pharmacopoeia* I find an entry about "parsley breakstone," but this is a totally different plant (*Alchemilla arvensis*), belonging to the order Rosaceae; a decoction of the flower-heads is said to be diuretic, and it has been given to discharge small calculi from the kidneys and bladder.

At any rate here are two cases—for my patient assures me that her friend's case was equally striking—in which the use of parsley infusion, persevered with, seems to have given immense relief, if not cure, to gall stone impaction.

Bromsgrove. H. CAMERON KIDD, M.B., F.R.C.S.

PREGNANCY AFTER LIGATURE OF FALLOPIAN TUBES.

IN a previous communication (BRITISH MEDICAL JOURNAL, October 20th, 1917) I recorded a case of contracted pelvis which had been treated by Caesarean section thrice; at the last operation, at the request of the patient, sterilization was attempted, both Fallopian tubes having been ligatured with No. 1 Chinese twist and then divided, and the peritoneum sutured over each cut end with No. 1 chromic catgut. This operation was done on June 10th, 1917, and the patient left the hospital on the twentieth day, nursing her child.

In the middle of September, 1919, she had a normal menstrual period, and on January 10th, 1920, she came to me and stated that she had "seen nothing since." Abdominal examination revealed a uterine enlargement of about the size of a sixteen weeks' pregnancy. In March strong fetal movements could be detected, and there could be now no doubt of her pregnancy. She was admitted to the Norwich Maternity Institution on June 18th, and on the 20th I performed Caesarean section. There was little

trace of the former uterine incision, but a number of omental adhesions were found; the Fallopian tubes appeared patent and intact throughout. After delivery of a living male child and suture of the uterus I on this occasion ligatured both Fallopian tubes in two places with silk and excised the portion between, about 2 in. in length.

Dr. Lee, in his treatise on *Obstetrics* (1913 edition), states that ligature and division of the oviducts has failed to prevent conception, but he gives no references to any literature on the subject, and I have been up to the present unable to trace any, hence this record.

Norwich. ARTHUR CROOK.

TWO ECTOPIC GESTATIONS IN THE SAME PATIENT WITHIN EIGHT MONTHS.

THE following case presents a number of features which, though not very unusual in themselves, form a rather remarkable combination: (1) The fact that the woman was nulliparous; (2) the slight disturbance of menstruation and the complete absence of irregular or excessive vaginal bleeding; (3) the location of the conception on both occasions in the fimbriated end of the Fallopian tube; (4) the fact that in four and a half years of married life the only two pregnancies were tubular and occurred within a period of eight months.

Mrs. E. N., aged 29 years, was admitted to hospital on December 13th, 1919, complaining of acute abdominal symptoms. She had been married over four years, had had no children, and the only menstrual irregularity that could be elicited was that the last period was three weeks overdue. The abdomen was opened in the middle line and a ruptured ectopic gestation found on the left side. A note made at the time says: "Conception apparently in the fimbriated end, becoming peritoneal at an early date." A fetus nearly 2 in. long and the placenta were removed from Douglas's pouch. The left tube and ovary were taken away. Recovery was uneventful.

The same patient was admitted again on June 27th, 1920, complaining of almost identical symptoms—in fact, she herself was convinced that the same thing had happened. Her periods had been regular since the previous operation except that on this occasion the last period was a fortnight overdue. The abdomen was opened again in the middle line and a ruptured ectopic gestation found on the right side. A complete ovum three-quarters of an inch in diameter was found free in the peritoneal cavity and was removed. The fimbriated end of the Fallopian tube was greatly expanded, showing a raw surface which was bleeding freely. The end only of the tube was taken away. Recovery was again uneventful.

London, S.E. R. C. HARKNESS, M.B., F.R.C.S.

INTOLERANCE OF CALOMEL.

THE following case of marked idiosyncrasy to calomel may be of sufficient interest for publication:

On the night of April 25th I was called to see H. S., a man aged 65. On arriving I found him to be suffering from intense abdominal pain. He had vomited six or seven times during the evening, and his body was covered with an urticarial rash, which was extremely irritating. On April 24th he was feeling "liverish," and he went to see a chemist, who advised him to take a 1 gr. calomel pill. The patient said that calomel did not suit him as a rule, but on being told that 1 gr. could do no harm, he took the pill.

On the following morning the patient much regretted having taken the pill, as he very soon recognized that he was having the same symptoms as he had had on two previous occasions after taking calomel. He told me that he would have swellings and thickening of the skin in various parts of his body and limbs, and that ultimately the skin would peel off in large flakes. His word proved to be correct. On the following day he had marked oedema of the neck and lobes of the ears, and for the next week he had transient oedema of the forearms, legs, and eyelids. The vomiting ceased after a mixture of bismuth carbonate and tr. chlorof. et morph. co., but the abdominal pain, although less severe than at first, continued for four or five days. On April 26th the urine became scanty and there was severe pain in the right loin. The skin was very dry. His temperature was 99.8° F. and pulse 90. The urine increased in quantity next day and in two days' time was normal, and the pain in the loin had disappeared.

At the end of the week the rash disappeared and a fine desquamation had commenced on the front of the wrists. There was, however, still some oedema of the eyelids and lips. The patient continued to improve, but the desquamation continued for four or five weeks. When last seen—on July 20th—he had quite recovered, but had decided never to take calomel again.

The three similar attacks, following immediately after taking a small dose of calomel, appear to me to make the diagnosis quite clear.

Shanklin. R. F. BOLT.

Reviews.

PLASTIC SURGERY OF THE FACE.

THE value of organized team work and concentration of special cases could scarcely be better illustrated than by the work of Major GILLIES and his *confrères* at Sidcup. During the past four years these able surgeons have made an intensive study of war injuries to the face and jaw, and their records, which they now publish in a book entitled *Plastic Surgery of the Face*,[1] mark a real progress in plastic surgery. Innumerable problems of great difficulty have been dealt with and the brilliant results achieved are startlingly revealed by many series of photographs. That so much has been accomplished for these, perhaps the saddest and most tragic of war *mutilés*, merits the highest praise.

The book is prefaced by a brief summary of the principles by which the surgeon should be guided. Attention is drawn to the necessity of making a careful estimate of the actual loss of skin, lining mucous membrane, and bony or cartilaginous structures. Photographs to show the original contour have been found a valuable aid in estimating the extent of the injury. An important point, and one that hitherto has frequently been disregarded, is to replace as early as possible all normal tissue and to maintain it in normal position. At this operation all scar tissue is excised, and to avoid its reformation skin is temporarily sutured to mucosa whenever feasible. The restoration of parts lost is designed from within outwards. The lining membrane is considered first, then the supporting structure, and finally the skin. Omission to provide a lining membrane for mucous cavities is regarded as the supreme cause of failure of facial plastics in the past. To reconstruct the lining mucosa pedicle flaps of skin may be employed, or to replace the vermilion border of the lip flaps of mucosa may be taken from the normal lip. To deepen sulci the authors use a modification of the Esser epithelium inlay-graft. In fashioning the facial scaffold, the replacement should be as nearly as possible in terms of the tissue lost—that is, bone for bone, cartilage for cartilage, fat for fat, and so on. For large cosmetic effects, cartilage is held to be unrivalled. It is readily obtained from the costal cartilage, can be fashioned to the required shape, and remains permanently of the form and size it has when embedded. The covering tissue is replaced either by skin grafts or skin flaps. Whole skin grafts are better cut to the exact size of the gap, in order that normal tension may be maintained. Thiersch grafts, in the form of inlay-grafts, are valuable for ectropion. The majority of defects are made good by tubed pedicle flaps, ascending from the chest or descending from the scalp. They may be made the vehicles of hair, for example, in replacing eyebrows, or of fat, in order to fill a gap in soft parts, or of bone or cartilage. Thus, in reconstructing the nose, the authors first embed cartilage over the glabella: at a second operation, a small flap containing the cartilage is turned down and made to substitute the lining mucosa and bony support of the nose: for the superficial coverings, a long flap, containing the anterior temporal branch of the pre-auricular region, is employed.

The greater part of the volume deals with the subject in a regional manner, and here will be found a mine of valuable clinical detail. Finally, a chapter is devoted to the application of the lessons learned during the war to the problems of facial plastics in civil surgery. A new vista is opened for the treatment of cicatricial ectropion (which in the past has been far from satisfactory), for the repair of the nose destroyed by destructive inflammatory and granulomatous conditions, and for large defects produced by trauma.

It is earnestly to be hoped that the experience acquired as a result of the war in this difficult and highly specialized branch of surgery will be applied to the treatment of those industrial injuries of the face which call for plastic operations, and to the repair of facio-maxillary defects resulting from operations for malignant disease of these parts. The operative technique which is called for in these cases can

[1] *Plastic Surgery of the Face.* By H. D. Gillies, C.B.E., F.R.C.S., Major R.A.M.C. London: H. Frowde, and Hodder and Stoughton. 1920. (Med. 4to, pp. 420; 844 figures. £3 3s. net.)

be carried out successfully only by surgeons who, possessing a natural aptitude for the work, have had special opportunities of gaining experience in its evolution. This is a matter deserving the consideration of the Ministry of Health; it would be well for it to provide beds in a central institution where these cases, which in any single area are comparatively uncommon, could be segregated and treated by men who, like Dr. Gillies, have treated a large number with so much skill and success.

The volume, which is excellently written and abundantly illustrated, is a valuable contribution to surgery, and must be considered one of the war classics.

HAROLD J. STILES.

DERMATOLOGY.

THE third edition of Dr. R. L. SUTTON'S textbook on *Diseases of the Skin*[2] adds to the reputation he has gained from his previous writings. It presents to the reader a judicious blend of well prepared information, and while the clinical aspects of disease are thoroughly dealt with, care has been taken to include what may be called the newer conceptions of dermatology, such as anaphylaxis and focal infection in their special relationship to the subject. Beginning in the traditional manner with chapters on anatomy and physiology, a large number of both the more common and rare forms of cutaneous disease are next described. On the whole, these are of similar type to those met with in this country, some little difference only being found, as in respect to blastomycosis, of which no completely accepted instance has as yet been recognized in the British Islands.

Probably the two most important sections are those dealing with eczema and syphilis. Upon the subject of eczema Dr. Sutton has much to say. It may be asserted with some degree of confidence that all will not be in complete agreement with him in his views of this condition, for although he does not subscribe altogether to the opinion of Norman Walker—whom he quotes—nevertheless he goes so far as to say that eczema is only a dermatological scrap-heap, from which from time to time certain diseases that present a characteristic and definite symptomatology are subtracted. Those who hold such opinions can hardly be expected to convey to others a clear idea of the condition they thus describe. And yet, to some at least, the *reaction* termed eczema is a very definite conception. The admirable writings and teaching of the French school, and especially of Brocq and Darier, have succeeded in reducing the problem to relatively simple proportions, principally because the distinction between eczema and eczematization is insisted upon, thereby removing the chief stumbling-block. In making this criticism it is not intended to suggest that Dr. Sutton has failed in his method of dealing with this very difficult subject. He has written a useful chapter wherein the student will find much to help him in both diagnosis and treatment.

To the important subject of syphilis eighty pages are devoted. Here also the same care is shown, and it is interesting to see how completely the views of authorities on the other side of the Atlantic accord with those accepted on this side. In such a book, as would be expected, attention is chiefly devoted to the disease as it appears on the skin and mucous membranes, since it is in such situations that the dermatologist meets with it. A well chosen selection of photographs illustrate the types of eruption; one of these would seem either to have been included in error, or else the text fails to make its significance sufficiently clear. It appears on page 721 and purports to represent the syphiloïde post-érosive of Jacquet. This is not a syphilitic condition, as Jacquet was careful to point out; we are therefore somewhat at a loss to understand what it is doing in this galley.

Should the author resent the criticisms we have ventured to make, he may well reflect that his book has proved its success in the most practical and substantial manner—it has reached a third edition. The medical reader does not buy indifferent books. We are confident that the reputation achieved by the previous editions will be well maintained by the latest, and that those who seek information on the subject of dermatology will be well advised to turn their attention to the work under review.

[2] *Diseases of the Skin.* By Richard L. Sutton, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine. Third edition, revised and enlarged. London: H. Kimpton, 1919. (Roy. 8vo, pp. 1084; 910 figures, 11 coloured plates. 42s. net.)

PUBLIC HEALTH LAW.

MR. W. ADDINGTON WILLIS, in the second edition of *The Law Relating to Housing and Town Planning in England and Wales*,[3] provides a comprehensive treatise dealing with every aspect of his subject. Housing is affected not only by the six statutes on the subject, but by other Public Health and Land Acts, and the author has done well not to print and annotate the statutes section by section, but to gather the various heads of information into chapters and paragraphs under suitable headings. This method facilitates reference to the sections of the various Acts, and will increase the value of the book to persons concerned with housing schemes. The new edition differs from the first in that it is confined to England and Wales. Full consideration is given to recent legislation down to and including the Housing, Town Planning, etc., Act, 1919. The work makes a wide appeal, for the information it contains is of importance not only to lawyers, medical officers of health, and officers of sanitary authorities, but also to members of those authorities, as well as to owners of housing and building land, who need to possess a knowledge of the details of housing and town planning. The book is provided with tables of statutes and of cases, with references, and with an index and a synopsis. They provide a ready means by which the inquirer can find the information required, and make plain the great scope of the subject of the book.

The appearance of the eighth edition of HAM'S *Handbook of Sanitary Law*[4] indicates the large demand there exists for this valuable *vade mecum*. The present edition is edited by Professor H. R. KENWOOD, who has brought the subject matter well up to date without destroying the handy dimensions of the book. It is a marvel of condensation of legal phraseology, and enables the reader to obtain in a concise form a clear knowledge of English sanitary law and its administration. By the use of large and heavy leaded type and of good paper the publishers have assisted the author in rendering sanitary law attractive to the D.P.H. student, as far as the nature of the subject permits. Other advantages of the primer are that it brings to a focus facts which are scattered through various sections and chapters of other works, and classifies and epitomizes the substance of Public Health Law under suitable headings.

Dr. CHARLES PORTER has published a second edition of his handbook, *Sanitary Law in Question and Answer*,[5] of which the first edition was reviewed in our issue of March 4th, 1911. The author's object is to aid the student by formulating short questions arising out of the many Acts that deal with sanitary matters and public health, and answering them in clear and concise language. There are twenty-five sections on the Public Health Acts and twenty-four on allied Acts. The revised answers include a brief statement of the main changes brought about in connexion with public health administration by the Ministry of Health Act, and summaries of other health legislation that has come into operation during the ten years since Dr. Porter's catechism was first published.

CHILD WELFARE.

IT is indubitable that those "engaged in, or training for, work as health visitors, or in welfare centres, crèches, and nursery schools," for whom, according to the description on the cover, *The Child Welfare Movement*[6] is primarily intended, will find Dr. JANET E. LANE-CLAYPON'S manual extremely useful. Publishers' notices do not, as a rule, underestimate the value of their productions, but this

[3] *The Law Relating to Housing and Town Planning in England and Wales.* By W. Addington Willis, LL.B.Lond. Second edition. London: Butterworth and Co., and Shaw and Sons. 1919. (Demy 8vo, pp. xliv + 261.)

[4] *Handbook of Sanitary Law.* For the Use of Candidates for Public Health Qualifications. By B. Burnett Ham, M.D., D.P.H. Eighth edition. Edited by Henry R. Kenwood, C.M.G., M.B., F.R.S.Edin., D.P.H. London: H. K. Lewis and Co., Ltd. 1920. (Fcap. 8vo, pp. xxiv+216. 5s. net.)

[5] *Sanitary Law in Question and Answer.* For the use of Students of Public Health. By Charles Porter, M.D., B.Sc., M.R.C.P.Edin. Second edition. London: Longmans, Green and Co. 1920. (Cr. 8vo, pp. 196. 6s. 6d. net.)

[6] *The Child Welfare Movement.* By J. E. Lane-Claypon, M.D., D.Sc. London: G. Bell and Sons, Ltd., 1920. (Cr. 8vo, pp. 352; 7 diagrams. 7s. net.)

volume would appear to have a wider use than is modestly claimed for it.

In twenty chapters the author has given clear accounts (from which consideration of historical development is not omitted) of the various branches of child welfare work as carried out in areas of divergent economic constitution. In addition notes are given regarding day nurseries, nursery schools, tuberculosis visiting, pre-natal work, midwifery, and notification of births and of infectious diseases. In each branch of work the existing conditions are concisely and clearly summarized. The author's expressions of opinion may be commended alike for their sound judgement, and for the fairness with which reference is made to views with which she does not agree. Clearly written chapters on Local Government areas, authorities and machinery, are also included in this volume, which those interested in the principles of public health or of sociology will find very useful as a book of reference. Recently issued official figures and suggestions regarding maternity and child welfare, ailments among school children, midwifery services, nursery schools, etc., are quoted in appendices occupying ninety pages, and there is an excellent index.

NOTES ON BOOKS.

SIR JAMES PURVES STEWART'S *Diagnosis of Nervous Diseases*,[7] now in its fifth edition, has long been recognized in this country and abroad as a standard work upon the subject of nervous disorders, and fully deserves the great success its completeness and originality have won for it. To the neurologist it is indispensable; to medical practitioners and advanced students of medicine in search of knowledge on any neurological question of diagnosis it may be recommended as the best book of reference. The style is clear and concise, the illustrations are excellent, and the book is well turned out.

Dr. JOSEPH HEAD states that infection of the teeth and gums is directly or indirectly responsible for half the fatal diseases, and though this may seem a high estimate, his booklet *Everyday Mouth Hygiene*[8] deserves attention. He insists that in order to prevent decay the use of dental silk is essential, as otherwise the spaces between the teeth cannot be cleared from bacteria; the curative action of dental silk is twofold, removal of the mass of infection and, by rubbing the bacteria into the gums, vaccination. The method of using the dental floss is fully illustrated by figures, as is also that of the toothbrush, which should not be more than 1½ in. long or have bristles more than ¼ in. long. Stress is laid on the great importance of brushing the gums. In conclusion, there is a chapter on irregularity in children's teeth.

The thirty-ninth volume of the *Transactions of the Ophthalmological Society of the United Kingdom*[9] contains the communications read before the society at its seventh annual congress, together with those of the affiliated societies at their annual meetings. As an abstract of the congress appeared at the time in the BRITISH MEDICAL JOURNAL, it is only necessary here to call attention to the more important features of the volume. The papers of outstanding importance are as follows: The Bowman Lecture on plastic repair of the orbital cavity, by V. Morax; the discussions on (1) visual requirements of aviators, (2) eyesight and education. A paper by William Lister and M. L. Hine on evulsion of the optic nerve forms a very important contribution to our knowledge of this rare condition. Treacher Collins writes on abiotrophy of the retinal neuro-epithelium, or retinitis pigmentosa; while the same author with Leslie Paton contributes an interesting account of a rare condition, angioma of the choroid. Ernest Clarke writes on presbyopia, Mayou on endotheliomata of the orbital periosteum, and the list may fittingly close with the Doyne Memorial Lecture on preventive ophthalmology, delivered at Oxford by Herbert Parsons.

[7] *The Diagnosis of Nervous Diseases.* By Sir James Purves Stewart, K.C.M.G., C.B., M.D.Edin., F.R.C.P. Fifth edition, revised and enlarged. London: Edward Arnold. 1920. (Med. 8vo, pp. viii + 584; 298 figures. 30s. net.)

[8] *Everyday Mouth Hygiene.* By Joseph Head, M.D., D.D.S., dentist to the Jefferson Hospital, Philadelphia. Philadelphia and London: W. B. Saunders Co. 1920. (Pp. 67; 39 figures. 5s.)

[9] *Transactions of the Ophthalmological Society of the United Kingdom.* With which are affiliated the Oxford Ophthalmological Congress, the Midland, North of England, Irish, and Egyptian Ophthalmological Societies. Vol. xxxix. London: J. and A. Churchill. (Demy 8vo, pp. xlvii + 428; 2 coloured plates and numerous illustrations in text. 12s. 6d.)

Kirkes's *Physiology* first appeared in 1848, and owed much of its merit to the fact that it was based upon the lecture notes of James Paget. Its fourteenth edition was published in 1896 under the editorship of Professor HALLIBURTON, who has now seen fifteen editions of the book through the press. It soon became evident that Professor Halliburton was more than an editor, with the result that the name Kirkes was dropped many years ago, and the volume is known as Halliburton's *Handbook of Physiology*.[10] Written on the classical lines, this well known standard textbook is full of the facts and figures required by students of physiology, with whom it has always been a favourite for its directness and simplicity. We wish it the continued success it so well deserves.

IN the JOURNAL of July 17th, 1920, we gave at page 86 a short account of the provisions of the new Rent Restriction Act. This is a topic of immediate personal concern to a great many householders, and to those also whose savings are invested in house property. The new Act displaces all the previous Acts, altering the scope of the restrictions as well as the restrictions themselves. Perplexed readers may be glad to know of a pamphlet which aims at setting out in plain language the complicated provisions of the new legislation. Such a work is that entitled *The Tenants' Emergency Charter (Houses, Shops, etc.) under the Rent Restriction Act, 1920*,[11] of which the fifth edition has reached us. This pamphlet deals particularly with statutory rents up to £105, the grounds and limits of increase, fixity of tenure, exceptions, furnished houses, shops and other business premises. In an accompanying circular the publishers strike a note which will appeal to many: "The subject," they say, "is involved, and the Act—like its predecessors—has been framed in the worst possible style of obscure draftsmanship."

The thirty-first volume of the *Transactions of the American Pediatric Society*[12] contains a number of papers and discussions on the maladies of childhood that will be read with interest by medical men interested in the diseases of children. Of particular importance are papers on "Foreign bodies in the air and food passages" by Dr. Graham, and on certain aspects of intestinal sepsis by Drs. Porter, Morris, and Meyer.

[10] *Handbook of Physiology.* By W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S. Fifteenth edition (being the twenty-eighth edition of Kirkes's *Physiology*). London: John Murray. 1920. (Demy 8vo, pp. xix + 936; 581 figures, many coloured; 3 coloured plates. 18s. net.)

[11] Published by Oliver and Boyd—London: 33, Paternoster Row; Edinburgh: Tweeddale Court. (2s. net, by post 2s. 2d.)

[12] *Transactions of the American Pediatric Society.* Thirty-first session, held at the Chalfonte Hotel, Atlantic City, N.J., June 16th, 17th, and 18th, 1919. Edited by Oscar M. Schloss, M.D. Vol. xxxi. (Med. 8vo, pp. 270.)

PRESENTATION TO DR. J. A. MACDONALD.

THE following further subscriptions have been received from August 4th to August 7th, in response to the appeal published in the JOURNAL of July 24th (p. 129), towards a presentation to Dr. J. A. Macdonald on the occasion of his retirement from the office of Chairman of Council of the British Medical Association which he had held for ten years. Subscriptions of any amount not exceeding five guineas should be made payable to "The Macdonald Presentation," and sent to the Medical Secretary, British Medical Association, 429, Strand, London, W.C.2.

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British Medical Journal.

SATURDAY, AUGUST 14TH, 1920.

THYROID GRAFTING.

The transplantation of thyroid gland tissue from a healthy person may prove a means of relieving congenital myxoedema due to a deficiency or absence of the gland. There are, besides, cases of acquired myxoedema in which the ordinary thyroid medication is ill-borne, or an excessive removal in the course of an operation for goitre is followed by the appearance of cachexia strumipriva. An article in the July number of *Medical Science*[1] reviews the experiences which have been gained from experiments on animals and in the course of surgical operations, such as were practised by the late Theodore Kocher from 1883 to 1914. The results of experiments on animals are quite definite; no graft survives and becomes established as an actively secreting gland unless it be a transplant from an animal of the same species. A graft from an animal of another species serves the recipient for a short while as a supply of thyroglobulin, but ultimately disappears. The same has happened in all patients in which a graft has been taken from an animal.

It is not a question of providing a temporary scaffold on which the tissues of the host can rebuild a permanent structure, but of ensuring that the graft shall itself survive, hypertrophy, become incorporated, and actively secrete material identical with that of the normal gland. The experiments begun by Alexis Carrel in New York on the cultivation of living tissue *in vitro* show the extreme importance of the influence of the medium in which the growth occurs. Observations made on thyroid gland tissue following transplantation have shown that after a day and a half rapid degeneration starts in the centre of the graft, most advanced in the cells of the blood vessels, and next in the glandular elements, which lose their staining properties and disappear. At the same time the graft is invaded by small round cells, by which its elements are replaced. After three days, if the graft is going to persist, there begins at its periphery a proliferation of the nuclei of the thyroid gland cells; this is followed by cell division and buds are formed; they grow into cylindrical collections of cells, from which new alveoli develop. At the same time, from the border where the tissues of the host are in contact with the graft, new capillaries are formed, which push into the graft between the glandular epithelium. The newly developing alveoli do not exhibit colloid formation for some time; functional activity on the part of the graft depends at first upon the store of colloid transplanted in the original gland tissue.

In order to succeed in implanting active thyroid gland substance the graft must be taken from a human being, and from a thyroid gland which is actively secreting at the time. If the graft is taken from a normal thyroid gland a short course of iodine administration is a useful preliminary in order to ensure that the graft contains a full store of thyroglobulin. Suitable material is supplied by parenchymatous and exophthalmic goitres so long as no degeneration has occurred, for the cells of these growths are actively secreting and possess a certain property of proliferating, like new growths. On the other hand, adenomas and cystic goitres are not suitable, for their cells have lost secreting power, and are tending to myxomatous degeneration. It is probably of great importance that the blood reactions of the donor and recipient should be alike; a natural similarity may be assumed in the case of the father or mother of a child; Kocher laid stress upon examinations of the blood by the methods of Abderhalden and others. The graft must not be damaged by crushing during the transference, nor become infiltrated by blood. It is best transferred directly by two surgeons working simultaneously, one taking out the graft, the other preparing the patient for its insertion. It is only when a surgeon must work singly that the graft should be placed in a sterile salt solution at blood heat; it should remain in it as short a time as possible. In order that the graft may be cut out with the least amount of mechanical injury, it should be taken from the anterior surface of the upper part of a lateral lobe. The piece should be so cut as to include the capsule of the gland, and it should be taken up by impaling it on a fine fork.

So far there is agreement; as to the site for implantation there are differences. The graft may be implanted in Douglas's pouch through a short hypogastric incision. The advantage of this spot is the freedom from haemorrhage, so that there is no danger of the graft becoming encapsuled and destroyed by blood clot. Moreover, there is a rapid absorption through lymphatic channels, and thus both the colloid from the graft, as well as waste products of metabolism, are quickly taken away. A piece as large as half a thyroid gland may be transferred, and this is the only way in which parathyroid bodies can be included in a graft uninjured by bruising. Some deem this important, but there does not appear to be sufficient grounds for holding that parathyroid tissue is an essential ingredient of a successful implantation. The objection to the method is the large size of the graft and the abdominal incision, and also that it does not lend itself to repetition.

Kocher adopted in particular the insertion of the graft into the cancellous tissue of the upper end of the diaphysis of the tibia. A hole is made of a size sufficient to hold a cherry; it is essential that haemorrhage should be arrested, hence the actual insertion of the graft may be delayed; the grafting can only be repeated once again, namely, on the opposite side. Payr inserted the graft into the substance of the spleen. An incision is made in the left hypochondrium, and the spleen drawn outwards; blunt forceps are thrust into its substance and dilated. Then, along the track so made the graft is pushed on a fine fork; sutures are next inserted into the capsule, and over this the omentum is stitched. At the same time other grafts may be inserted into the peritoneal cavity in contact with the omentum, or into the properitoneal or subcutaneous tissue, through the same incision. The spleen, however, may be found so fixed that it cannot be drawn forwards, and great care has to be taken not to set up haemorrhage.

On the whole the best results have followed the multiple subcutaneous implantations adopted by Cristiani of Geneva, who since 1894 has made some twenty-four communications on the subject. A small bit of graft is taken up on a fine fork, a short incision made in the skin of the chest or abdomen, a small three-bladed dilator is thrust in to form a track, along which the bit of graft is pushed on the fork and the incision then closed. This procedure may be repeated in as many places as wished—forty bits of thyroid gland have been transplanted at the same sitting.

[1] *Medical Science. Abstracts and Reviews.* 1920. ii. 330

Inserted in this way, the danger of the graft being surrounded by blood is prevented. The objection may be raised that such small pieces are readily absorbed; but if only one or two survive and grow, the object is attained, and at the worst the procedure can readily be repeated.

In all cases after the grafting the recipient should continue to take thyroid extract, until the influence of the grafted tissue begins to show itself. The success which has hitherto attended thyroid grafting has varied in degree; equilibrium may be established by continuing doses of thyroidin which can be well tolerated. After a graft has established itself it may be practicable to omit the thyroid medication for intervals of increasing length.

In one of Cristiani's cases the removal of a goitre had been followed by cachexia strumipriva; multiple subcutaneous graftings restored the patient. After the first graftings the previous dose of thyroid extract was reduced to one-third. Three months later thirty-eight small pieces were transplanted, and the thyroid dose was after this reduced to one-eighth, anything more causing symptoms of hyperthyroidism. The patient married, and had three children; subsequently the dose of thyroid extract was restricted to one-tenth of that before the grafting. In another case, a child aged 3, in whom the thyroid gland was absent, after being grafted from a healthy man aged 18, underwent marked physical and intellectual improvement, and the transplanted pieces could be felt under the skin. In a third case, after excision, only the isthmus had been left, and two grafts were inserted into the subcutaneous tissue. Three years later both of the grafts, as well as the isthmus, had notably enlarged. On exploration one of the grafts was found to have increased ten times in volume, and its histological appearance was that of normal thyroid gland tissue.

LONDON'S WATER SUPPLY.

THE report of the Departmental Committee appointed to inquire into the provisions and effect of the Metropolis Water Act, 1902, has now been published.[1] It contains, besides important recommendations regarding finance and administration, information of considerable medical interest. The Metropolitan Water Board took over in 1904 the control of the public water supplies provided by eight independent water companies and two urban district councils in London and certain of the surrounding areas. The Water Board is responsible for the public water supply of an area of 558 square miles, extending from Hertford in the north to Westerham in the south, and from Northfleet in the east to Hounslow in the west; it includes a few urban and many rural districts in the outer ring of greater London. The revenue of the Water Board is mainly derived from charges—controlled by Act of Parliament—made for domestic and other supplies; its capital debt is met by Metropolitan Water Stock, for the issue of which the Act of 1902 provided. Since 1908–9 there has been an annual deficiency, which grew from £224,153 in 1915–16 to £964,852 in 1919–20; the deficiency of the Water Fund is made good under the Act by an apportionment on the rates of the boroughs and districts of the area controlled by the Water Board. It was the rapid growth of this deficiency and the increasing burden on the rates of the contributory areas which led in 1919 to the institution by the Ministry of Health of the Departmental Committee. The Committee has studied the present provision for storage of water and the additions which are proposed. In 1892 Lord Balfour's Commission, and in 1897 Lord Llandaff's Commission, estimated the increase of population which was likely to occur in London during the oncoming forty years. The reservoir accommodation provided by the Water Board was planned in accordance with the reports of these Commissions; but in 1911, as a consequence of the census, which showed that the anticipated rate of increase had not been attained, the proposed extensions were curtailed. The existing storage accommodation consists of 11,524 million gallons net (12,587 gross). The engineer to the Water Board estimates that in a maximum period of continuous drought (a repetition of the 142 successive dry days of 1899) the present storage, together with the supplies available for abstraction from the Thames, the Lea, and the New River, and from wells, would permit an average daily supply of 287.9 million gallons. This figure must be compared with the average daily call on the Board during the 142 days of maximum demand in 1919—namely, 291.3 million gallons; if a drought like that of 1899 were to coincide with the period of maximum demand, there would be an average daily deficit of 3.4 million gallons. By new works, in progress or in immediate contemplation, the service reservoir capacity will be increased by almost 7,000 million gallons net; when these new reservoirs and certain new wells are in use, the average daily supply in times of drought will be 338.5 million gallons—enough to supply a population of roughly eight million with water at the rate of 42.63 gallons a head a day, which was the average daily demand for each person among an estimated population of 6,832,967 in 1919. The Committee remarks that this additional provision for storage is not to be regarded as extravagant. If the growth of the population of London has fallen short of expectation, the demand for water has become very much greater. From 1905–19 the use of water in London increased by at least 20.4 per cent., while the population increased by 8.33 per cent. only; the increase in the domestic daily consumption represents 12,889,000 gallons. The report upholds the opinion of the officers of the Water Board in attributing a large proportion of this excess to increased waste by the consumer, and rightly directs the attention of the public to this matter. The Committee has been impressed with the breadth and thoroughness of the work of the Water Examination Department, which was set up under the direction of Sir Alexander Houston, and works in close co-operation with the engineering department, under the supervision of the Water Examination Committee. The results of Sir Alexander Houston's investigations into methods of chlorination, the filtrable qualities of various types of water, and so forth, "have not only been valuable from the point of view of health, but have saved the Board considerable sums of money." The quality of the water, it is stated too, has appreciably improved. The Committee's recommendation that, in order that the revenue from the sale of water may meet the expenditure, the charges fixed by the Act of 1907 should be increased—for domestic supply by 5 to 10 per cent.—is not unexpected, and should be received with less chagrin by the public when it is remembered that deficiency in the Water Board's revenue has hitherto been met by authorized levies on the local rates.

[1] Cmd. 845. H.M. Stationery Office. 4d. net.

THE RESEARCH DEFENCE SOCIETY.

IN the last quarterly report of the Research Defence Society allusion is again made to the increased recognition by the public of the rightness of the society's cause. When the society was formed, twelve years ago, "hard fighting against prejudice and hatred" was urgently required. In the report of work during 1917 and 1918 it was recorded that "the old sort of controversy has ceased, for the present at any rate, to be needed. There has been no urgent demand for our propaganda. The public has learned the value and the necessity of experiments on animals, and we cannot actively defend research unless it is actively attacked." It now appears that the opponents of experimental

research are seeking to exploit the Women's Co-operative Guild, the Women's Freedom League, and the Girl Guides; a more serious view, however, is taken of the present conjunction of antivivisection with antivaccination. These forces, at one time plainly separate, are now conjoined, with the common idea, it is suggested, that if a doctor puts anything into the patient's mouth it will probably do good; but if he puts it under the skin it is likely to be "animal filth" or "automatic blood poisoning." On this account particularly the Research Defence Society welcomes the affiliation of the Jenner Society, whose honorary secretary, Dr. Arthur Drury of Halifax, has joined the committee. The rights of the conscientious objector, the conditions of granting exemption certificates, and the like problems did not form the chief concern of the Jenner Society, and do not come within the direct range of the work of the Research Defence Society, which announces its intention to "keep out of politics." The society is about to publish an essay by Dr. Mary Scharlieb on vaccination, and has issued an important pamphlet[1] by Sir David Bruce on the prevention of tetanus during the war by the use of antitetanic serum. In this booklet is described, concisely but in terms which can be grasped by the lay mind, the striking fall in the incidence of tetanus which followed the introduction, in November, 1914, of prophylactic injections of antitetanic serum in cases of war wounds; the chart (given in the JOURNAL of July 5th, 1919, p. 16) of this fall is also reproduced. The statement made in one of the antivivisection journals last month that "We see the hand of the Research Defence Society behind the production of *Pasteur* at the Aldwych Theatre" is quoted by the honorary secretary as an undeserved compliment. At the annual general meeting of the society, which took place on June 23rd, with Viscount Knutsford in the chair, Colonel R. McCarrison gave an address on vitamines in relation to health, and Dr. and Mrs. Mellanby showed specimens illustrating the important work which they have done in this field of research. The society desires to make it known that it is prepared to supply schools, social institutes, and literary societies with slides, notes, and references for lectures dealing with the medical and surgical discoveries of the past half-century; letters should be addressed to the honorary secretary, 11, Chandos Street, Cavendish Square, W.1.

GENITO-URINARY SURGERY.

THE last *Transactions of the American Association of Genito-Urinary Surgeons*[2] contain a number of papers of more than ordinary interest. B. S. Barringer describes a case of adenoma-carcinoma situated at the apex of the bladder. The growth was not intimately associated with the vesical wall; indeed, at operation the circumscribed tumour readily peeled off from it. Barringer suggests that the neoplasm had its origin in the epithelial vestiges of the allantois. In a paper on hour-glass bladder J. R. Caulk gives an account of two cases in which the bladder was divided into two portions by an indurated fold. An excellent cystogram illustrates the condition present in one of the patients. Treatment consisted in excision of the bladder wall. Caulk gives two valuable hints on the technique of bladder resection: one is that free mobilization of the bladder is a great help in facilitating the subsequent operative steps, the other is the value of ureteral catheterization in keeping the bladder dry. The catheters are brought out through the suprapubic wound. J. D. Barney gives interesting figures of the treatment of vesical calculi at the Massachusetts General Hospital. In the home of the Bigelow evacuator it is perhaps natural that lithotrity is the method of choice. Of 455 cases of stone treated during the past fifty years in 392 the stones were crushed and in 63 removed by suprapubic cystotomy. The mortality of the two groups shows 25 per cent. for the suprapubic cases, 7.25 per cent. for those treated by the lithotrites. The high mortality in suprapubic cases is, of course, due to the fact that the operation was reserved, as a general rule, for the worst cases. The stay in hospital after the two operations is vastly different—on an average eleven days after lithotrity, thirty-five days after cystotomy. It is interesting to note that there were 20 per cent. of recurrences, especially frequent where the previous operation was lithotrity. In the discussion following the paper the majority of speakers upheld the lithotrite, as indeed was to be expected. We observe that one of the contraindications to the use of the lithotrite, besides bladder diverticulum, urethral obstruction, and the large size of the stone, is "the general surgeon's lack of training in the use of the lithotrite and evacuator." Several surgeons spoke warmly in favour of crushing under local anaesthesia. Swinburne has done this forty-six times, Caulk twenty-seven. The last named surgeon has had excellent results from instillations of the Bulgarian bacillus in phosphatic incrustations of the bladder. He injects into the bladder an emulsion made from Hynson-Westcott's crushed tablets. Braasch contributes an exhaustive analysis of the 532 cases of renal tuberculosis operated upon at the Mayo clinic. Seventy-one per cent. of the patients gave evidence of tubercle elsewhere in the body, but the mortality in these was no higher than in those who otherwise appeared healthy. It is noteworthy that of sixteen cases of bilateral renal tuberculosis, thirteen are dead. This finding traverses the statement so often made that if the worst kidney is removed, the other will "clear up." Colston and Waters draw attention to the fact that in renal tuberculosis of old standing calcification often occurs, rendering the kidney clearly visible by *x* rays. Some admirable radiograms are reproduced, including a print showing a calcified pelvic ureter. H. H. Young, Frontz, and Baldwin contribute an exhaustive paper on congenital obstruction of the posterior urethra, and A. R. Stevens and Peters give a comprehensive account of urinary purpura. J. R. Caulk and Fischer describe their experiments on ureteral ligature. The work was suggested by a case in which both ureters were accidentally included in ligatures during the course of a total hysterectomy. The authors believe nephrostomy to be the operation of choice, since the catgut is never absorbed quickly enough to allow the ureter to reopen, and so prevent destruction of the kidney. Ligature of one ureter leads to hydronephrosis, and destruction of the kidney is well advanced at the end of six weeks.

[1] *The Prevention of Tetanus during the Great War by the Use of Antitetanic Serum.* By Major-General Sir David Bruce, K.C.B., F.R.S. London: George Pulman and Sons, Limited, Quayer Str[illegible] W. 1s.
[2] *Transactions of the American Association of Genito-Urinary Surgeons*, thirty-first annual meeting, Atlantic City, N.J. Vol. xii.

DRIED ANTISCORBUTIC FRUIT JUICES.

THE very valuable and thorough work on vitamines carried out at the Lister Institute during the last few years has frequently been noticed in our columns, and in recognition of certain aspects of it the Stewart Prize of the British Medical Association has been awarded to Dr. Harriette Chick, with whom are associated her fellow workers. Recently, under the direction of Professor Arthur Harden, of the Biochemical Department of the Lister Institute, a long series of experiments have been made on a very practical point, namely, a method of concentrating fruit juices so as to preserve their antiscorbutic properties. From the experiments of Chick and Rhodes,[1] and of Harden and Robison,[2] it appears that the minimum daily ration of fresh fruit juice necessary completely to protect a guinea-pig from scurvy is 24 grams of apple juice, 5 to 6 c.cm. of lime juice, and 1.5 c.cm. of orange juice. It has been shown also[3] that the antiscorbutic vitamine of orange juice loses little of its potency when heated to 100° C. for an hour. It appears therefore that orange-juice is particularly suited to the preparation of dried

[1] Chick and Rhodes: *Lancet*, 1918, ii, 774.
[2] Harden and Robison: *Journ. R.A.M.C.*, January, 1919.
[3] Chick and Rhodes: Loc. cit.

antiscorbutic vitamine. Harden and Robison, in 1919, evaporated freshly expressed juice at 40° C. under reduced pressure. The juice, reduced in two hours to syrup, was made to occlude large numbers of small air bubbles, and was desiccated *in vacuo;* the residue was a crisp, dry hygroscopic solid. Tests on guinea-pigs carried out when the material was four to seven months old showed that a daily ration of 0.5 gram (equivalent to about 4.5 c.cm. of raw juice) afforded complete protection from scurvy. The minimum daily amount sufficient to afford protection was not determined, but in another communication[4] the authors report that during an experiment lasting eighty-five days, guinea-pigs receiving each day 0.15 gram of dried juice (corresponding to slightly less than 1.5 grams of fresh juice) remained free from scurvy. It seems, therefore, that during the process of evaporation there is no appreciable loss of antiscorbutic vitamines. It is also important to determine whether there is a loss of vitamine during storage of the dried product. With this object Harden and Robison[4] gave a number of guinea-pigs dried orange juice which had been stored for nearly two years in a dry atmosphere at room temperature. They found that 0.5 gram dried juice (corresponding to 4.5 c.cm. raw juice), given daily, afforded protection from scurvy; it seems clear, therefore, that any loss of antiscorbutic vitamine which had occurred during storage did not amount to more than 60 per cent. of the amount originally present. A further series of experiments is contemplated, in which the animals will receive smaller amounts of dried juice which has been preserved for twelve months; in this way it is hoped to ascertain with greater precision to what extent (if any) loss of vitamine occurs during storage. The successful preparation of dried orange-juice on a large scale was reported by Givens and McClugage[5] in 1919. The Merrell-Soule process for making milk powder was employed, the juice, mixed with corn syrup, being forced as a fine spray into a chamber where it met a current of air heated to 75 to 80°. The drying was extremely rapid, and the product, tested in 1 gram doses (equivalent to 3 c.cm. raw juice), effectively protected guinea-pigs from scurvy. Givens and McClugage intend to report on the activity of their preparation after it has been stored for considerable periods; it is desirable also that the effects of administration of smaller doses be observed.

BRITISH DENTAL ASSOCIATION.

The annual conference of the British Dental Association opened last week at Bournemouth. In his valedictory address Mr. Montagu Hopson, the retiring president, declared that the dental profession was ready to take its part whole heartedly in the public health service suggested in the interim report of the Consultative Medical Council, and to play that part in a national spirit and not in a narrow syndicalist spirit of corporate selfishness. Mr. A. E. Ball of Boscombe, the newly-elected president, in his introductory address, spoke of the lamentable condition of the teeth of a large section of the people of this country. The British Dental Association, he said, had made representations on this subject, but hitherto these had proved of no avail. Discussing the financial position of the hospitals, he held that the cold fact must be faced that sooner or later some of the voluntary hospitals must receive either rate aid or State aid; he thought it better that they should be developed in a national scheme rather than curtail their usefulness on a voluntary basis. On the second day the conference discussed various aspects of a public dental service. Mr. W. H. Jones of Cambridge drew attention to the deficiency in the dental profession of efficient controllers and administrators; he suggested that the best way to remedy this defect might be that adopted by the medical profession in regard to public health administration—namely, the institution of post-graduate courses in dentistry along similar lines to the courses in state medicine. Mr. Wolston Watt of Bourneville discussed the urgent need for industrial dental clinics. He condemned the unregistered dental practitioner who, for his own ends, told parents that it was natural for temporary teeth to decay, and that, in any case, as these had to be shed they were not worth troubling about. Moreover, unqualified persons added to their unrighteousness by discouraging conservative dentistry, holding out the bait of a set of artificial teeth which would neither decay nor ache. Dr. R. A. Lyster, County Medical Officer of Health for Hants, urged the British Dental Association to force the Government to recognize the need for adequate dental research work.

[4] Harden and Robison: *Biochemical Journal*, xiv, 2, April 20th, 1920.
[5] Givens and McClugage: *Amer. Journ. of Diseases of Children*, July, 1919.

POST-GRADUATE COURSE AT THE UNIVERSITY OF PARIS.

The Faculty of Medicine of the University of Paris announces a vacation course of practical instruction on "Les notions récentes de clinique pratique et d'application des méthodes de laboratoire au diagnostic," under the direction of Professors M. A. Gilbert and Maurice Villaret, with the collaboration of nineteen colleagues. From September 24th to October 12th thirty-one lectures will be given; they will be delivered twice or thrice daily, together with daily instruction in the hospitals. The course, which will include opportunities for individual practice, will be illustrated by photographs, by cinematograph films, and by demonstrations of instruments and preparations. Foreign as well as French medical men will be admitted; the fee is 150 francs. Particulars of this and of other courses to be given during 1920–21 may be had from Dr. Paul Descomps, Clinique médicale de l'Hôtel-Dieu, Paris.

We much regret to announce the death, at Bournemouth, on August 8th, of Mr. Sinclair White, C.B.E., consulting surgeon to the Sheffield Royal Infirmary. We hope to publish a biographical notice in an early issue.

Medical Notes in Parliament.

The Proprietary Medicines Bill.

LORDS' AMENDMENTS IN COMMITTEE.

The Proprietary Medicines Bill was taken through Committee of the House of Lords on August 6th. At the outset Lord Bledisloe expressed the earnest hope that the provisions would not be whittled away. He mentioned that he had been instrumental in the House of Commons in getting set up the Select Committee upon whose findings the measure was based. He recalled the mass of falsehood and fraud which were disclosed before that Committee, and the evidence given of misery, breakdown in health, and mortality following on the deception of ignorant and credulous people. He also emphasized that in no other civilized country was so little protection given to such persons. Earl Russell having referred to several particulars in regard to which the bill does not come up to the recommendations of the Select Committee, Lord Astor replied that certain recommendations had not been included because they were not matters affecting the Ministry of Health—matters, for instance, connected with the Stamp Act. He understood it was very possible legislation on that portion of the Committee's findings might follow if and when the present bill was made law. There was a second recommendation that the Indecent Advertisements Act be amended on the lines of Lord Braye's bill; but that was not in the interests of health, but of public morals. Further, the recommendation of the Committee for giving a period to the validity of names used as trade marks for drugs primarily concerned the Board of Trade. As for registration fees, the opinion was that, having regard to the changing value of money, they had better be dealt with by regulation. Viscount Astor added, on another question, that under the bill the retailer was not made responsible for the ingredients—he was responsible for selling articles as registered. The manufacturer was otherwise responsible

Lord Emmott next raised, on Clause 1, the objection of the trade to the deposit of the formulae of proprietary medicines with the Ministry of Health. That disclosure is, under the bill, to remain confidential save in certain circumstances, but Lord Emmott had down a series of amendments, the principle of which was that the Ministry of Health should be satisfied with a statutory declaration either that the medicine did not contain any article mentioned in the Poisons and Pharmacy Act, 1908, or specifying the article or articles mentioned in the said schedule which were contained in the medicine, and the proportions in which they were used. He asserted that this controversy was really between the medical men and the manufacturers; many doctors wanted a complete disclosure. The manufacturers said that some members of the profession were out to destroy their trade, with the effect, incidentally, of increasing their own remuneration. He was not concerned with that dispute; all he wanted was to see the best arrangements made for the public. The Canadian Bill requiring deposit of formulae was withdrawn last year by the Dominion Government, and the Canadian Act now required a statement on oath that a preparation did or did not contain certain drugs mentioned in the Schedule to the Act. He questioned whether any protection would be afforded by the deposit of formulae. Many of the proprietary medicines were in the nature of harmless soothing syrups. Viscount Astor, in reply, took up first an appeal for postponement of the consideration of the bill. It was hoped, he said, to get the measure through the House of Lords this month, so that it might come before the House of Commons in the first week of the autumn sittings. As for the talk about a large staff being required by the Ministry to enable this work to be carried through, he said many of the proprietary medicines were quite harmless, and therefore it would not be necessary to have a large staff analysing them and going into them in every detail. It was, however, vitally necessary that the Minister of Health should know what they contained. He had too high an opinion of the Civil Service to believe that officials would give away the secrets. As for the suggestion that medical men would benefit from disclosures, he pointed to many passages in the evidence given before the Select Committee to the effect that the profession stood to gain from the public buying a large number of these "remedies," because afterwards they would require more attention. The question of export had been raised, but the bill did not touch export, as there could be direct consignment, and then the articles came under the law of the country to which they were sent. Coming back to the matter of disclosure of contents and proportions to the Registrar, Lord Astor reiterated the danger of excessive doses of substances which were not poison being given to children and others. He had before him a case in which two children lost their lives by taking a patent medicine containing an ingredient which was not a poison. He would not quote a large number of examples, as he did not wish to create a prejudice against the trade in patent medicines as a whole. He had put down an amendment which would be a real protection against the attempt by a trade rival to get at a formula by a trumped-up prosecution. The amendment would restrict proceedings against an owner of medicine to the Ministry of Health. Lord Bledisloe, opposing Lord Emmott's amendment, said that in France, Italy, and Austria the real prescription or formula had to be made known to the public. Outside the schedule of the Poisons and Pharmacy Act were many articles noxious to health, and, in fact, poisonous if administered in more than infinitesimal doses. Besides, there were ingredients which, though not actually poisonous, were useless for the purposes for which they were recommended. The amendment struck at the root of the bill.

Speech by Lord Dawson of Penn.

After Lord Askwith had spoken briefly in favour of the amendments, Lord Dawson gave reasons why he held that merely stating a thing was a poison was not only inadequate, but entirely unsuitable. Remedies were not to be judged suitable or unsuitable according to whether they were poisons. Many remedies which made for good in proper hands made for harm in unskilful hands. The practice which had arisen of adding to the scheduled poisons in the Poisons Act was a wholly undesirable practice. That schedule contained many drugs, unfortunately, which were not poisons at all, and it produced an undesirable prejudice in the public mind to overstate the number of poisons. The fact was that knowledge tended to make the composition of drugs more and more precise, and thus their action became more accurately known and powerful for good and for evil—for good in the hands of people who knew, and for evil in the hands of those who did not. That was one reason why a wide discretion must be allowed to a Government department. On the one hand, no injustice must be done to remedies which were either harmless or (as many of them were) useful, and on the other the public must be protected against remedies which were potentially evil. A patent medicine was not necessarily harmful *per se*, but it might have the effect of masking the early symptoms of serious and grave diseases, and thus the true investigation of the case was delayed. Ultimately there was a very delayed investigation, and it was found to be too late to do anything. He suggested, therefore, one criterion: whether a particular combination of drugs did by having this effect do such harm to the public as to require that the public should be protected. He did not wish to give needless examples, but malignant disease at once came to mind. It was quite easy to assuage the symptoms for six months and thus delay scientific diagnosis and treatment. Then, too, there were drugs exceedingly efficacious if properly handled, but dangerous in the hands of inexperienced people. It was the abuse of the drugs that was the poison. Let them notice, for example, the group of aniline drugs, which was being extended every year. They were extraordinarily dangerous in the hands of people who did not know how to use them. Many of the simple headache powders in the hands of skilful persons were most efficacious; it was common to see people in a collapse who used them without knowledge. So with the remedies for sleeplessness. They were improved and increased every month, and this was one of the most important aspects of medical research—but what was very good treatment in the hands of a skilled man became a drug of a most dangerous character if it were allowed to be sold anyhow to members of the public. There was only one way, in his judgement, of deciding whether a particular remedy needed to be safeguarded in such a way that the public should not derive any harm from it: that was, to look at that remedy all the way round, not only as regarded its individual ingredients, but as regarded the combination of ingredients, and the purpose for which it was used. He wished to make it perfectly clear that he was not against proprietary medicines as such. It was only the public interest which should be the criterion to Parliament and to the profession to which he belonged. There were many patent medicines which might not only be harmless but efficacious. And there was this to be said for patent medicines—they had not only a physiological basis for their efficacy, but also a psychological basis. If a man found his symptoms set forth in lurid print, which described a massed attack by microbes on his entrails, and if he saw side by side with that wonderful picture a remedy that was going to remove it, to give a victory over pain, that inevitably would, if suitably advertised, have a greater effect in cure than the same ingredients prescribed under a prosaic prescription. Supposing that was true, providing that a remedy was harmless, why should they remove the illusion? Therefore they must not neglect the psychological basis of patent medicines. He hoped he had made it clear that he was not against proprietary medicines as such, and he suggested that the most efficient way of discriminating between the good and the harmful was set forth in the bill.

Safeguards for Legitimate Trade.

In the subsequent discussion of the clause, Lord Riddell supported the amendment on the ground that the provisions of the bill had not been sufficiently thought out. He objected to the new proposal of Lord Astor to restrict action to the Ministry of Health without, as he held, sufficiently defining the duty of the Ministry. Lord Emmott, while complimenting Lord Dawson on his speech, was unwilling to acknowledge himself convinced, but said he would not press the amendment to division. He said that if the bill was passed into law the Government might thresh out matters with the trades concerned and the experts. Lord Astor expressed his willingness to hear anything the trade had to say as to any further safeguards to the bill, but he repeated that it was vital to the measure that the ingredients of remedies should be disclosed to the Ministry. Lord Emmott's amendment was then by leave withdrawn, and the House agreed to Lord Astor's new provision, to come at the end of Subsection (3) and to set forth that proceedings should be taken only by the Minister.

On Clause 2—for the Prohibition of Sale, etc., of remedies for certain diseases—it was agreed, at the instance of Lord Askwith, to take "Deafness" and "Rupture" from the schedule, and to insert in the text of the clause an amendment making it unlawful for any person to sell any medicine or surgical appliance of any kind whatsoever purporting to be effective for the cure of deafness or rupture. The effect of this change is to leave a liberty for sale for relief, as distinct from sale for cure, to be subject to the ordinary provisions of the bill. On Clause 3 Lord Emmott moved the omission of paragraph (*a*), which was designed to prevent the enclosure of a recommendation of a second proprietary medicine in a parcel in which one is sent. Lord Emmott said that its effect would be that if a cough mixture was being sent a

man would be debarred from recommending a gargle. Lord Astor explained that the provision was intended to prevent what were called "trailer" advertisements. The vendors of these proprietary medicines got in touch with people, and if they did not succeed with the first, recommended a second, and then a third, and so it went on. It was because the practice enabled owners of secret remedies to get in touch with nervous people and lead them to self-diagnosis that the proposal was made. The Marquis of Salisbury thought the provision difficult to defend. The whole spirit of the bill was that people would not be misled by a patent medicine containing dangerous drugs. People must be regarded as reasonable and not as idiots. If it were thought that these circulated advertisements contained something objectionable on the other ground with which the bill dealt, he should better understand the provision. Lord Bledisloe acknowledged that the recommendation was one on which the Select Committee did not set very great store, and it was now of less importance since legislation had been passed dealing with other matters. In the circumstances Lord Astor agreed to the withdrawal of the section. Lord Bledisloe proposed a new paragraph to prohibit the proprietor of a patent medicine claiming, by advertisement or otherwise, therapeutic effects grossly in excess of those which were justified by the ingredients. He said that the Select Committee attached great importance to the recommendation. Lord Astor concurred that the proposal would strengthen the bill, but suggested that it should be raised on the Report stage. The Marquis of Salisbury hoped that the Government would not accept the amendment; in his opinion it went much too far. Indeed, it seemed to him that the question of whether therapeutic effects were grossly exaggerated was a matter of doubtful opinion, and they did not want to admit matters of doubtful opinion into the bill. Lord Shandon also thought the proposal went too far. There was scarcely one of those medicines which would not come within the term, for if they took the analyses made by the British Medical Association they were no good for anything. Lord Riddell was of the same opinion, and Lord Bledisloe withdrew the amendment to enable him to consider the matter further before the Report stage. Lord Bledisloe next moved to add to paragraph (*b*) a prohibition against the offer to return money paid if cure, relief, or prevention did not take place. He said that many cases had been brought under the notice of the Select Committee where there were lock-up shops from which letters were collected. The vendor did not, in fact, return the money, and if any communication took place between him and the consumer, all he said was that if the consumer would go on using the remedy long enough he would derive benefit; this was a fraudulent action. The amendment was accepted.

Lord Bledisloe further moved to add a paragraph to prohibit the use of the name of a fictitious person in connexion with a medicine. Lord Astor was unable to accept the proposal, as it would strike at many businesses dependent entirely upon the familiarity of the public with the name. The amendment was withdrawn. On the subsection prohibiting a statement to the effect that a proprietary medicine or proprietary appliance was recommended by a duly qualified medical practitioner without including in the statement particulars regarding the practitioner, Lord Emmott moved an amendment to limit the prohibition to a "false statement." Lord Astor was unable to accept this, as it was most undesirable that remedies should be advertised with names attached to them of doctors who had worthless degrees. It was only fair to the public, if a doctor's name was attached to a remedy, that his degrees, qualifications, and address should be stated. The amendment was withdrawn. Earl Russell withdrew his amendment to require a statement of the ingredients of a medicine to be placed on its wrapper or label. He had come to the conclusion that it would be contrary to the line of the bill as drawn up by the Government. Lord Astor afterwards moved as an addition to Subsection (3) of Clause 4 certain machinery provisions in regard to the register. One of these would prohibit the registrar from disclosing any extract from the formulae book in any proceedings in any court, except proceedings against the persons concerned in the preparation and sale of the medicine. On the regulations clause Lord Astor moved a small addition to maintain the secrecy of the formulae and yet to allow publication of the list of owners of proprietary medicines. This was agreed to. An amendment by Lord Bledisloe was also accepted to require that in the case of any synthetic drug sold as a proprietary medicine, the chemical name thereof should appear on the label and on every advertisement relating thereto. Before this was done, Lord Dawson, on appeal, gave an impromptu definition of a synthetic drug. On the regulation as to the amount of alcohol to be contained in a proprietary medicine, Lord Astor accepted an amendment moved by Lord Askwith to make the definition clearer. As the provision read in the text of the bill, the proportion of alcohol contained in a proprietary medicine would have to be stated on the label when such medicine contained "more than such an amount of alcohol as ought, in the opinion of the Minister, properly to be contained therein, having regard to the purposes for which the medicine is to be used." As revised, the provision will require the statement of proportion to be made on the label when the medicine contains more than "such an amount of alcohol as is in excess of that required, in the opinion of the Minister, for solvent or preservative purposes."

On Clause 6, as to the removal from the register of medicines and appliances, Lord Astor moved an amendment that the Minister should not give public intimation of his intention until the expiration of twenty-one days. Lord Dawson thought it was important there should be some provision that the Minister could refuse registration to any new remedy proposed, without any odium whatever attaching to the owner of that medicine. The Minister might wish to withhold his consent because he thought the preparation was likely to be deleterious to the public health, either because it contained an ingredient which when used by unskilled people might do harm, or because some particular way in which the remedy was presented to the public might quite unintentionally and without any bad faith produce an impression on the public mind leading them to use it and suffer thereby. He thought that this refusal might even be done confidentially. Lord Riddell held that it would be most dangerous that any such bureaucratic powers as Lord Dawson suggested should be given. He much preferred the view of Lord Askwith that, prior to an appeal in the High Court, no action could be taken to a man's detriment. Ultimately Lord Astor's amendment as to twenty-one days' notice was agreed to, and Lord Astor said he would consult the Minister of Health as to whether anything should be done on the lines suggested by Lord Dawson. On Clause 8 (Penalties) it was agreed, on the motion of Lord Bledisloe, to raise the maximum fine from £100 to £500 for offences which were misdemeanours, and from £20 to £50 in cases of summary conviction. Lord Shandon afterwards moved the following as a new clause to meet the danger of injury to owners from publication of formula:

> To avoid unnecessary disclosure of the composition or proportion of the ingredients of any proprietary medicine in the course of proceedings under this Act, it is hereby enacted—
>
> (1) In all proceedings, criminal and civil, a report by an analyst of the Ministry of Health that he has made, or caused to be made, a proper analysis of the medicine, and that in his opinion it is not compounded of the ingredients or in the proportions specified in the register, shall be taken as sufficient *prima facie* evidence of these facts.
>
> (2) In the case of any proceedings before a judge or judges, sitting without a jury, any further evidence shall be heard in camera and under such conditions of secrecy as the judge or judges may direct.
>
> (3) In any criminal proceedings the accused person may elect to be tried by a judge without a jury.

Lord Astor said he did not think there was the danger which Lord Shandon feared of the formula being disclosed. He thought the proceedings would probably turn upon the absence or presence of a particular ingredient which might be prejudicial to health. That particular fact might come out, but there was no reason why the exact composition of the whole of the ingredients should come out at any trial. However, as Lord Shandon was prepared to discuss with him the possibility of framing this new clause differently, he would be at Lord Shandon's service; on this understanding the amendment was withdrawn. The adoption of the schedule, with the omission of "Deafness" and "Rupture," concluded the proceedings in Committee.

New Site for London University.

Mr. Gilbert asked whether the Senate of the University of London had not accepted the offer of the Government of land in Bloomsbury by the date July 21st, by which the President of the Board of Education insisted that a definite offer must be received; whether the Government proposed to proceed with the purchase of the land; and if so, at what cost, and to what purpose would it be devoted. Mr. Chamberlain replied that Mr. Gilbert had doubtless seen the terms of the resolution of the Senate. The Government had hoped that a definite decision would have been reached by July 23rd on the offer made by the Government on April 27th; but July 21st was not irrevocably fixed as the final date for acceptance or rejection of the Government's offer. The Government did not propose to proceed with the purchase opposite unless and until the University accepted the offer. It rested with the vendor of the site to decide whether he would agree to further delay. If he were unable to do so, the University would have lost what the Government considered a valuable opportunity.

Mr. Lorden, on August 10th, asked the Chancellor of the Exchequer whether, as the Senate of London University had not accepted the offer of the Government of a site in Bloomsbury, he would say if, in the event of the Senate of the London University approving Kenwood, Highgate, as a suitable site for the university, the Government would provide similar financial aid equal to the cost of the Bloomsbury site. Mr. Chamberlain replied in the negative. He said the offer of the Bloomsbury site afforded the senate the opportunity of establishing the university close to the British Museum, with its unrivalled facilities for students, and of collecting in one group the central buildings of the universities and the principal constituent colleges. The purpose of the offer was to enable the university to rise to the high level of its opportunities and duties as the metropolitan university of the empire. This purpose would not be secured by the selection of another site not affording the same facilities, and His Majesty's Government would not be justified in calling upon the general taxpayer for such an extraordinary contribution on other grounds.

Census Bill.

On the second reading of the Census Bill on August 4th —a measure which was introduced in the Lords—Dr. Addison mentioned that it gave power in cases where the need arose to enable a census of a district, or a part of a district, to be taken for special administrative purposes, after a period of not less than five years; otherwise the principle of a ten-year census was retained; power was to be taken under this Bill for recurring censuses without further legislation.

Captain Elliot, on behalf of the medical profession, welcomed the bill and the power it provided for the more frequent taking of the census. Mr. Inskip raised the question as to the additional information that might be sought under the larger powers to be obtained under the bill. It had already been stated that before further demands were made they would have to be embodied in the order of the Ministry which would have to be laid on the tables of both Houses of Parliament. Mr. Inskip was not satisfied with that, and referred to the schedule under which information may be sought as to infirmity or disability. Imagine, he said, the head of a family having to cross-examine maids or any other person in the house as to whether they were suffering from infirmity or disability because some medical expert, with the best will in the world, thought it desirable that such a census should be taken. Dr. Addison offered assurance that there was no sinister motive in the schedule scheme, which was arranged really to meet any necessity for information for specific circumstances in a local census. He did not think that his department at present intended to make any alteration in the form of the 1911 census.

In Committee, on August 9th, Dr. Addison agreed to place in the bill a provision that, if additional particulars —beyond those in the schedule—were to be sought, that part of an order should not be valid until approved by resolution of both Houses of Parliament.

Census (Ireland) Bill.—The second reading of this measure, which was in the first instance in the Lords, was taken in the House of Commons on August 5th. The Attorney-General for Ireland explained that it provided for a census on April 24th of next year. It contained provision for the appointment of enumerators by the Lord Lieutenant, and provisions for expenses. Captain Elliot, amongst several other members, protested against the bill being taken that night—after the passing of the Coercion Bill. There were good jokes, he said, and there were bad jokes; taking that bill that night was a bad joke. After having said that people should not have trial by jury, it seemed to him going too far for the House to say that, in order to do something for these people, they would count them. The measure, however, had its passage by 93 votes to 9. On August 9th the bill was read a third time and passed.

Colonial Medical Services Report.—Lieut.-Colonel Fremantle asked, on August 10th, whether there was at present a shortage of medical officers in the Colonial Service; whether this was an obstacle to the health and development of the colonies, and was largely due to the comparative unattractiveness of the service; whether the Under Colonial Secretary for the Colonies had now received and would publish the report of the committee which had recently investigated the subject; and would he state in what way and how soon he proposed to introduce the required and obvious remedies? Lieut.-Colonel Amery replied that he was aware that the shortage to which reference was made did exist, and that it was by no means confined to the Colonial Service. An improvement in the pay of medical officers had already been carried out in the majority of colonies and protectorates. The Colonial Secretary had recently received the report of the committee referred to. It required careful consideration, and he was not yet in a position to say what action would be taken upon it, or whether it would be published.

Medical Examinations: Latest Statistics. — Colonel Ashley asked, on August 3rd, how many pensioners had been boarded during the last twelve months, how many had been reduced, how many cases cancelled; and whether any facilities were given to men to be boarded in their own towns. Major Tryon replied that from July 1st, 1919, to June 30th, 1920, the Ministry of Pensions Boards had carried out 1,225,567 medical examinations. So far as possible men had been given the opportunity of being boarded in their own towns. Boards had been established in most of the large towns in the kingdom, and outstation boards were established as required, when the number of pensioners resident in the vicinity justified that course. In sparsely populated areas a travelling board visited the various centres at stated intervals. He regretted that he was unable to state the number of pensions reduced or cancelled during the past twelve months without undertaking a very laborious review, which the Pensions Minister did not consider he would be justified in imposing on his staff.

Invalid Pensions for Indian Army Officers. — Mr. Montagu said, in reply to Mr. Gwynne, on August 3rd, that the new rates of retired pay for officers invalided from the Indian army were being carefully considered in connexion with a warrant recently issued for the British service, and he hoped to be able to make a statement by the end of the month.

England and Wales.

Tuberculosis Services in London.

At a recent meeting of the London County Council some far-reaching proposals for the improvement of the tuberculosis dispensary services were adopted. These will involve an additional expenditure of £22,000 a year, and the appointment of twenty-five additional whole-time tuberculosis officers and an equal number of nurses. The normal basis of staffing will then be one tuberculosis officer for 160 deaths a year from tuberculosis in each dispensary area. The Public Health Committee presented a review of the Council's scheme since its inception in 1914, and pointed out certain defects in the dispensary system which made it less effective than it might be in early detection and prevention. The residential part of the scheme has also proved disappointing, but measures for improvement, such as a better method of selecting patients, await a later report. The number of beds now occupied under the Council's scheme and that of the Insurance Committee is 2,197. It is considered that the number of available beds should be increased to 2,750 (2,100 for adults and 650 for children), and it is anticipated that with improved facilities for obtaining institutional accommodation, immediate and early prospective requirements will be met. The total number of persons in London suffering from tuberculosis is estimated to be 90,000. The number of approved dispensaries is thirty-five, and of tuberculosis officers forty-one, of whom nine are part-time. The Committee thinks it desirable that contacts of every notified case should be examined by tuberculosis officers who should attend at the homes of the people if necessary, and that an officer should visit the home of every case at least once. The attention of the Ministry of Health is to be called to the need for co-operation between dispensaries and the departments of medical officers of health, and it is suggested that steps might be taken to set aside the technical difficulties which have prevented the medical officer of health of a local sanitary authority from utilizing the services of officers of a tuberculosis dispensary. It is also stated that few cases of doubtful diagnosis are referred by tuberculosis officers to the consulting centres at hospitals, and it is proposed that the existing arrangements at hospitals be varied so that each dispensary may be linked to one of a limited number of specially recognized consulting centres at hospitals which have physicians of special experience in tuberculosis on their staffs and are equipped with observation beds; tuberculosis officers would have access to these beds, and consultations upon their occupants would take place at regular intervals. In order to arrive at a definite diagnosis as early as possible there are to be shorter periods of observation, combined with a more intensive study of each case, full use being made of the facilities for diagnosis at the consulting centre. The practice of giving medicine for trifling symptoms in order to ensure the further attendance of patients at the dispensary, and the practice of treating patients at the dispensary on a large scale and over a long period, are to be discouraged (at one dispensary 4,569 prescriptions were dispensed for a total attendance of 4,853). In connexion with each dispensary adequate arrangements are to be made for following up patients, and treatment at a dispensary, as distinct from diagnosis and consultation, is, as a rule, to be limited to patients whose continued treatment requires special knowledge or technical skill and to those unable to obtain other medical attendance. In every dispensary there is to be at least one evening session a week and a session on Saturday morning or other time outside school hours for children. Opportunities for co-operation between the school medical officer and the dispensary are to be more fully utilized. The view is favoured that part-time tuberculosis officers might be engaged for the remaining time in the school medical service or other public medical work. The Committee also suggests, without making it a definite proposal, that tuberculosis officers should study carefully the needs and convenience of local medical practitioners and arrange periodical conferences with them. The Council, after ten minutes' discussion, agreed to the recommendations, and acquiesced in a proposal that they should be brought into effective operation at the earliest possible moment.

ASYLUM AND HOSPITAL ACCOMMODATION IN LONDON.

The London County Council proposes to turn the Manor Mental Hospital at Epsom into a certified institution under the Mental Deficiency Act. It will accommodate 1,000 cases of mental defect. Hitherto the hospital has been used as an institution for lunatics, but in view of the fact that another mental hospital has been released from military occupation and is again available for insane persons, and that Manor Hospital adapts itself well to the classification of various grades of mental deficients, and the training of such as are susceptible of improvement, it has been decided to make the alteration. Up to now the Council has had only two small institutions of its own for the reception of mental deficients, and 677 of the patients for whom it is responsible are housed in outside institutions under contract.

The Minister of Health has informed the Council that the Third London General Hospital at Wandsworth Common is no longer required by the military authorities, and has suggested that the buildings and site might be appropriated for the treatment of disease in the civil population. The Council, however, is advised that the retention of hospital buildings on this site is no longer possible without special parliamentary sanction, owing to the fact that the site is an open space which was about to be made over to the public for recreative purposes when the military authorities took possession.

PORT SANITARY ADMINISTRATION.

The Ministry of Health has issued statutory rules and orders[1] dealing with the measures necessary to secure improved port sanitary administration generally, and in particular the adoption by port and riparian sanitary authorities of more effective means for preventing the introduction into this country of infectious diseases, such as small-pox and typhus. The new regulations require from port sanitary authorities and their medical officers of health a more extended examination of persons entering the country than has hitherto been undertaken. The medical officer of health is empowered to board any incoming ship and in exceptional circumstances to cause it to be brought to, and, if necessary, moored or anchored. He may examine inmates of the ship and detain them either there or in an appointed place on shore; power is given to clean and disinfect contacts and those found to be verminous, as well as their clothes and belongings. Article 3 of the Port Sanitary Authorities (Assignment of Power) Order, 1912, is extended so as to apply to the whole or any part of a ship. Where extensive cleansing is necessary, it may be carried out by the officers of the authority and at the authority's cost. According to the circular which accompanies the statement of rules, the medical officer of health should examine the body, if still on board, of any person who has died during the voyage on a ship carrying no medical officer. By Article 8 of the rules, the authorities are empowered to provide, where necessary, additional equipment—for example, waiting rooms, disinfecting plant, hospital accommodation, and means of transport. The importance is emphasized of providing an adequate medical staff, with sufficient salaries. Regulations have also been issued for the payment to port and riparian authorities of grants in aid (not exceeding half of the approved net expenditure out of revenue) of expenses of port sanitary administration and of medical inspection under the Aliens Order, 1920.

Australia.

[FROM A SPECIAL CORRESPONDENT.]

THE NEW MEDICAL ACT.

AFTER striving for thirty years we have at last obtained our wishes. The Medical Bill has become law. It recognizes the principle of the necessity for a five years' course of study. It will no longer be necessary for us to register any foreign degree unless the country from which the diploma originates has reciprocity with the empire in the matter of registration. It will also be possible on application to the Supreme Court to delete from the Register the names of any who may be considered guilty of infamous conduct. Only registered persons will be able to hold certain appointments, and to sign death certificates, and there are also certain penal clauses. Unfortunately the Act does not actually forbid the unregistered man to practise. The proposal that the Government should nominate the whole of the Medical Board, has been replaced by a provision that the university and the medical profession shall each nominate one member, the Government naming the remaining three. In Parliament there were the usual protests from Labour members about creating a close corporation for the medical fraternity, but Labour here is apt to be intolerant of any unity except within its own ranks. There is an additional and a good reason for the exclusion of foreigners in the fact that the number of medical students enrolled during the war increased enormously when an edict went forth that they were to be exempt from active service till qualified. The three medical schools have now an output such as will more than satisfy any wastage from death or retirement of existing practitioners.

[1] Statutory Rules and Orders. 1920, No. 1294. 1d. net.

THE UNIVERSITY OF ADELAIDE.

The appointment of the new professors of anatomy, physiology, and pathology has brought to light many difficulties, owing to want of space and want of funds, in the way of giving adequate instruction in the medical school. A certain amount of relief, however, is afforded by a generous donation of £15,000 from the family of the late John Darling. The chair of pathology has been filled by the appointment of Dr. J. Burton Cleland, recently director of the Bureau of Microbiology at Sydney. Dr. Poulton having resigned, Dr. Cavenagh-Mainwaring, F.R.C.S., has been appointed lecturer on surgery; whilst Dr. Pulleine takes the subject of otology, in succession to Dr. Fischer.

FEDERAL MEDICAL OFFICERS' RELIEF FUND.

The Federal Medical Officers' Relief Fund has now reached the amount of about £11,000. Undoubtedly it would have made a stronger appeal had some idea of the extent of the need for such a fund been made evident. At present very few applications have been received for assistance. In the same way it is noticeable that there has been no call on the funds of the South Australian Medical Benevolent Association.

Correspondence.

PLEURAL REFLEX SYNCOPE.

SIR,—As I have discussed this subject in my *Diseases of the Arteries and Angina Pectoris* I have not felt called upon to discuss it again. But in your issue of August 7th is a letter from my friend and sometime colleague at Hampstead, Dr. Levy, on which I think there is something more to be said. I hope by abbreviation I do no injustice to his statement:—that, although reflex action of the vagus may in animals cause a brief cessation of the heart-beat, nothing approaching a fatal syncope has ever been recorded. If Dr. Levy thinks it worth while to consult the second volume of my work he will, I think, be interested to see that this statement needs some qualification. I will not ask him to accept my hypothesis that death in Angina Pectoris is due to vagus inhibition, an opinion I published in 1893, although it is now widely accepted in the United States and Canada, influentially accepted in France, and "absolutely accepted" by Professor Wenckebach in Vienna, who has just completed the notes of 500 cases of angina. I say, I must not presume to invite Dr. Levy to accept this proposition, yet I would refer him, in the same chapter of my book, to certain experiments by Dr. H. K. Anderson—the present Master of Caius. Dr. Anderson's experiments show how the vagus may bring the heart to mortal arrest, if the organ be in some way and degree enfeebled. In such cases in animals death by vagus excitation is easily brought about, and the enfeeblement need not be obvious. In young cats, as Dr. Levy says, vagus arrest is but momentary; but in old cats—without obvious heart disease—it is, or often may be, mortal. Now in many cases of pleural empyema the heart is at a disadvantage, or perchance intrinsically deteriorated; in such cases, as

I have found by personal experience, irritation of the lung may embarrass or even stop the action of the heart. In my book I have pointed out how and where in the lungs such interferences are more perilous. As I carried the operative treatment of pleural effusions from Trousseau's clinique into Great Britain, when my friend Professor Bowditch carried it into America, my survey, especially of the earlier and less dexterous phases of the procedure, is a fairly wide one. I agree with Dr. Levy, this accident rarely happens, but it is one not to be wholly disregarded. —I am, etc.,

Cambridge, Aug. 9th. CLIFFORD ALLBUTT.

ANTIMONY IN BILHARZIA.

SIR,—In the JOURNAL of July 24th there is a notice to the effect that the British Medical Association has given a grant for research into the treatment of bilharzia cases and allied conditions, with special reference to drugs less toxic than tartar emetic. There is no doubt that in the treatment of bilharzia disease antimony tartrates (potassium and sodium) should be used with great care and only by practitioners who are accustomed to work scientifically and be guided by the results of their work; but let us remember two facts in dealing with the toxicity of the drug in relation to its use for bilharzia disease.

1. Bilharzia disease is unlike kala-azar and trypanosomiasis—its victims are in the majority of cases strong enough to walk about. They are able to stand somewhat more drastic measures than kala-azar and trypanosomiasis patients, who are very often, when the doctor sees them, ill in bed and whose remaining strength renders the question of toxicity of greater consequence. Therefore the toxicity of antimony tartrate in bilharzia disease is not quite so pressing as it is in other diseases wherein intravenous injections of antimony are used.

2. We are aiming at stamping out bilharzia disease from a whole country (Egypt), where it affects practically the entire population, or perhaps even from a whole continent.

Therefore, in seeking for the best antimony derivative to be used as the standard remedy for bilharzia disease (other drugs would be used for special circumstances), we have not only to consider toxicity—we have, in addition, to find something which can be employed on a large scale and under varied conditions.

It should be (*a*) *readily procurable* and reasonable in cost; (*b*) *stable in tropical climates* where it may have to be stored; (*c*) *easily soluble* in water or normal saline solution—a muddy intravenous mixture is inconvenient to work with; (*d*) *colourless*, a pink solution such as colloidal antimony obscures the column of blood in the syringe, which is the only sure means of telling whether the point of the syringe is in the lumen of the vein; and (*e*) it is a very great advantage to have a derivative which can be boiled, if necessary, over and over again, and thus easily sterilized, whenever it is used—in an "out-station," for instance.

It would appear that the antimony tartrates (potassium and sodium) are not so toxic when used intravenously as when given by the mouth, and I think that a more pressing question than "toxicity" is the finding of a substitute for antimony tartrate where it is difficult or impossible to use the intravenous route—for example, for small children, very stout people, and the very ill and emaciated. It will be of the utmost value if Dr. Cawston discovers something which can be used intramuscularly or hypodermically, or perchance a drug which can safely be given by the mouth in sufficient quantity to kill the parasite in these cases.

The object of my letter is to point out that the degree of toxicity of antimony tartrate given by intravenous injection is not yet ascertained, and that apparently it is not so toxic by the intravenous method as it is when given by the mouth, and I think that we should ascertain the degree of toxicity before trying to discover a "less toxic" remedy.—I am, etc.,

London, W., July 30th. J. B. CHRISTOPHERSON.

BONESETTERS *VERSUS* THE SCIENCE AND ART OF SURGERY.

SIR,—The subject raised in your last issue by Sir John Lynn-Thomas is one of the greatest importance to the public, and I venture to offer my own views.

While realizing the pressing need there exists to day for the better technical training of doctors in the treatment of fractures of the bones of the limbs, I am convinced there is a greater need, which, if satisfied, will in due course bring the requisite training for the doctors. I mean the establishment in every industrial centre of hospitals commensurate with the demand existing for the proper treatment of all injuries, minor as well as major. Whatever view we may hold of the fitness and ability of the general practitioner to undertake the treatment of fractures of the bones in their length or at their extremities, one thing is obvious to all onlookers, and painfully so to the doctor: that is, he cannot make a success of it under the present system of domiciliary treatment, not only because he has had but little if any technical training in the handling of fractures, but because the conditions are against success. I am convinced that not until ample hospital accommodation is available, and the work is placed in the hands of a carefully and slowly trained staff, with everything needful at command, will it be possible to meet with some show of real success the varying demands of a broken leg or arm in its nursing as well as in its treatment. I hold that the satisfactory training of doctors in the special technique in connexion with the care of fractures is impossible in the hospitals of to day, and not till it is admitted that technical skill is the first essential, and not book learning, will it be realized that as at present run these institutions are not suitable for the work in hand. Unfortunately, knowledge may be gained without skill, but in this particular job skill is absolutely necessary, and it cannot be acquired without practice, carrying with it corrections and re-corrections of errors as they arise. The hospital must, then, become the workshop for the doctor who has gained a licence to practise the art of medicine, and that for the advantage of the community which he is destined to serve; and the community must realize that it needs technically trained doctors of the best. The enormousness of the advantages that would follow upon the establishment of such workshops in every industrial centre is beyond the conception of most people. The saving in the payments under the Workmen's Compensation Act would be very great, and the gain from the maintenance of efficiency in the injured workman I feel sure would surprise industrial magnates. Such is the only way to combat quackery, and bonesetters will lose their job only in proportion to the efficiency with which the doctors come to treat all forms of injuries.

I got my lessons early in life, and have since had from time to time reminders from which I have endeavoured to gain profit. In skill the bonesetter has on occasion got the advantage of me; in knowledge, I trust, I have left him behind. My experience prompts me to advocate the establishment of hospitals for the people, and on such a scale as to be able to give training in skill to the newly qualified doctor, and ultimately such a medical service as the community has a right to expect.—I am, etc.,

Cambridge, Aug. 9th. JOSEPH GRIFFITHS.

CALCIUM IN THE TREATMENT OF TUBERCULOSIS.

SIR,—The interesting point raised by Dr. Allison in your issue of July 31st, p. 187, was anticipated by Robin (of Paris), amongst others, some time ago; and our French colleagues, like some of us, have long been accustomed to give to children suffering from various forms of tuberculosis certain mineral preparations which appear to correspond to their special requirements.

Rather curiously perhaps, one of the most popular and successful of these French preparations is not a laboratory compound or artefact, but simply consisting of ground oyster shells; and ground oyster shells were employed empirically and with success in the eighteenth century in like cases. Rosenstein of Stockholm, for example, whose book on diseases of children was translated into French in 1778, recommended their administration in what mothers now call "consumption of the bowels."

The point is that oyster shells contain not only lime salts, but silicon, fluorine, and iodine, all of which, according to Robin's analyses, are "lost" in the process or stage of "demineralization" that, in his opinion, precedes tuberculosis of children and young people.—I am, etc.,

London, W., Aug. 5th. F. G. CROOKSHANK.

MORTALITY OF VENEREAL DISEASES.

SIR,—Mr. Charles Russ, writing in the BRITISH MEDICAL JOURNAL of July 31st, asserts that Sir J. Crichton-Browne has made a "serious misstatement of fact" in referring to venereal disease as one of the three chief killing diseases. A consideration of the facts will show that it is Mr. Russ who is wrong, and that the statement of Sir J. Crichton-Browne is perfectly accurate. Mr. Russ's assertion is based upon a very serious misconception. He has apparently entirely failed to realize the fallacies underlying the statistics provided by the Registrar-General regarding the venereal death rate. He has, furthermore, omitted to correlate and compare such statistics as there are with venereological experience and with *post-mortem* findings.

The Registrar-General's figures do not represent the number of people who die yearly from syphilis, but merely the number who are *reported* to have done so. Practically, as regards venereal disease they are of little more value than a rumour. The information regarding any cause of death is obtained by the Registrar-General from the death certificates signed by the medical practitioners of this country. The latest returns are not at the moment available to me. The figures for 1915 are, and they will suffice.

The total number of deaths in 1915 amounted to 562,000. Out of these, the diseases selected by Mr. Russ, read in round figures, as follows:

Tuberculosis	51,000
Pneumonia	49,000
Cancer	40,000
Syphilis	1,885

Thus, at the first glance, Mr. Russ appears to be justified in his assertion. But this justification disappears on a closer examination. The above figures merely represent the number of death certificates which have been signed with the words "Tuberculosis," "Pneumonia," "Cancer," "Syphilis," respectively, during the year 1915. It is impossible to postulate that every death certificate is filled in with a full and accurate diagnosis. We know that it is not so. It is considered no disgrace to die from any disease, except alcoholism and syphilis. The general practitioner whose honesty was such as to compel him to insert the word "alcoholic" before "cirrhosis of the liver" or the word "syphilitic" in front of "cerebral haemorrhage" in cases where these adjectives would represent the true state of affairs, would very soon find himself *minus* a practice. Yet we know that they ought to be inserted in very many cases if accuracy is desired. For example, of the 25,423 deaths from cerebral haemorrhage in 1915, the late Sir William Osler calculated that the prefix "syphilitic" should have been used 3,000 times. That calculation, as were all his others, was based upon his vast and almost unrivalled clinical experience. Osler analysed the mortality statistics for 1915, and concluded that a certain proportion of deaths labelled otherwise than "syphilis," were really due to the *Treponema pallidum*. The organism delivers its death thrust principally at the nervous and vascular systems. The following table shows Osler's conclusions:

Disease.	Total.	Number Syphilitic.
General paralysis	2,263	2,263
Locomotor ataxia	735	735
Other cord diseases	2,846	1,500
Cerebral haemorrhage	25,423	3,000
Cerebral softening	1,472	500
Paralyses	2,983	500
Other nerve diseases	15,000	2,000
Aneurysm and aortitis...	1,141	1,000
Organic disease of heart	56,000	5,000
Diseases of arteries	10,000	3,000
	117,863	19,498

The number of stillbirths in a year is not available, but Sir Arthur Newsholme, in his report on *Infant Mortality*, 1916, p. 8, places the number at about 100,000. The percentage of abortions and stillbirths due to syphilis has been variously estimated. Dougal and Bride (BRITISH MEDICAL JOURNAL, May 8th, 1920, p. 632) give it as 8 per cent. in their series of 100 cases at St. Mary's Hospital, Manchester. Bartholomew (*Journ. Amer. Med. Assoc.*, 1918, vol. lxx, p. 291) places it at 30 per cent. Royston in his series (*Amer. Journ. Obstet.*, 1917, vol. lxxvi, p. 582) found that syphilis was a cause of stillbirth in 25 per cent. In an investigation of 1,095 cases Adair (*Amer. Journ. Obstet.*, 1918, vol. lxxviii, p. 687) found that 12 per cent. were syphilitic. A survey of the literature shows the average to be 20 per cent. On Newsholme's estimate, therefore, the number of stillbirths due to syphilis is 20,000 per annum.

Out of 800,000 children born in 1915, 90,000 died within the first twelve months. A moderate estimate is that of all children below the age of 7 years who die in a year, in 10,000 cases the cause is syphilis. We can now compile the following table:

Syphilis (Registrar-General)	1,885
Nervous and vascular syphilis	19,498
Syphilitic abortions and stillbirths... ...	20,000
Infant syphilis	10,000
	51,383

These figures are in all probability an underestimate, but they suffice at once to place syphilis in the position assigned to it by Sir James Crichton-Browne. When, in addition, one considers the well recognized effect of the *Treponema pallidum* in predisposing to other infections—for example, tuberculosis—and its undoubted potency in reinforcing the predisposition to death by intercurrent diseases, it rises still higher in the scale of killing infections. The satisfaction to be derived from the contemplation of the fallacious figure of the Registrar-General is extremely unwise and dangerous. Two things are essential for the collection of accurate statistics—confidential death certification and compulsory and confidential notification.—I am, etc.,

Manchester, July 31st. E. T. BURKE, M.B.

SIR,—It would be out of place to quibble about statistics, for they could not possibly express the truth of the mortality of venereal disease any more than they could definitely decide the mortality of a malady like appendicitis—a malady which is uncommon among the insane. We must all agree that syphilis irrevocably spoils the substratum of the mind and body, whether it is of recent or past date. Again, are we not alive to the fact that once in the blood it vitiates the bricks and mortar, eventually picking out by selection some particular system of the body? May we not also say that it causes senility by plasmic destruction with microscopic and macroscopic changes in the bodily organs?

There are other measures of gauging the mortality of disease than by figures of arithmetical calculation—for instance, visit the Soane Museum, Lincoln's Inn Fields, and examine the painting by Hogarth, "The scene in a madhouse." There you will recognize the general paralytic and other examples of forms of insanity of a past generation, yet true to type to-day. Out of the ten figures in the picture two are at least "syphilitics." And the surgical and medical works in our professional libraries, are they not paged with the deadly consequences of venereal infection? Not least, regard such a terrible facial picture (photograph) as depicted in Rutherford Morison's *Introduction to Surgery*, p. 64, 1910. Surely these delineations alone of human suffering must appeal to those who have at heart the prevention of venereal disease.

Is the figure high enough when we see it stated (Gaucher) that syphilis accounts for a third of human pathology? Thus our duty in preventing this vicious canker-worm by giving our financial and professional support to the Society for the Prevention of Venereal Disease.—I am, etc.,

JOHN FREDK. BRISCOE.

Boscombe, Bournemouth, Aug. 7th.

SIR,—As an index of the actual "cause" of individual deaths, the Registrar-General's report is, of course, of a strictly limited utility. This is mainly owing to the fact that the average death is due to at least a hundred causes, all operating at once, and even with the abundant mass of paper now available for official pronouncements of all kinds, at most two or three of what appear to be the main or most immediate "causes" can be given in each case.

I have not seen the particular report which has given rise to the present discussion, but I should be surprised if, besides gonorrhoea, it has not omitted another of the most important "killing diseases" of our time. I refer to over-eating and general self-indulgence. This is not included, that I know of, in official returns, probably because it is not Greek, and therefore is not "scientific." Still (as all merely unlettered people know) it is one of the most potent causes of death. If people would not eat so much they would not be so ill as they are, and they would also die later.

Another allied scourge (purely psychological this time), which probably disables and slays more than syphilis, tuberculosis, and cancer combined, is loss of the sense of humour. So serious and so glaring has this condition become that even the Government has noticed it. One of the best proofs of the frightful inroads that this psycho-neurosis has made into our social fabric is the fact that organized attempts are being made to stay it. Doubtless the subject will before long be taken up by the Ministry of Health. *Quos vult perdere Jupiter prius dementat.*—I am, etc.,

Edinburgh, Aug. 7th. A. J. BROCK.

THE PLIGHT OF SOUTH RUSSIAN DOCTORS.

SIR,—The condition of medical men and women here is pitiable in the extreme. In this city the nine Government medical officers (whole time) receive 30,000 roubles a month, which at the present rate of exchange is rather less than £1, scarcely sufficing to procure them one meal a day. They have hardly a decent pair of boots between them, and are very shabby. They are stout-hearted with it all (and this cannot be said of everyone here at the present moment), and that they work conscientiously is shown by the surprisingly low cholera case mortality at the civil hospital of less than 20 per cent.; apart from skilled treatment the mortality is very high.

There is little enough money in the Treasury for the soldiers—an officer gets 30,000 roubles a month with rations, such as they are—but less still for civilians. A sum of £10 a month would suffice to double the "salary" of the Government medical officers, and enable them to get a little more food; with many the staple diet is brown bread and water; and clothes, especially boots, if here in time for the winter, would be a godsend.

Drugs, instruments, scientific books, and periodicals are conspicuous by their absence. Rogers's treatment for cholera is done at the civil hospital with one rusty intravenous needle with three holes in it.

In the course of my work for Lady Muriel Paget's Missions, I make a practice of attending all meetings of medical men and women here, and I am in a position to say, in contradiction of the malicious statement so freely propagated to the effect that all meetings, even of medical men, here are of a political nature, that all I have met and worked with hold strictly aloof from such an unprofitable subject.

Donations of money or clothes will be forwarded by Lady Muriel Paget from 17, Buckingham Palace Road.—I am etc.,

TEMPLE GREY,
Sevastopol, July 2nd, 1920. Late Surgeon R.N.

VACCINAL CONDITION OF SMALL-POX CARRIERS.

SIR,—Dr. Archibald Kidd's letter in your issue of July 31st carries us, I think, a step further. He frankly disavows that infantile vaccination will protect the whole community, its primary object being to protect the child population; and he says (and I agree) that the real point at issue is whether the child population derive sufficient advantage to outweigh the particular disadvantage upon which I base my objection—namely, the tendency of infantile vaccination to spread small-pox by masking the disease.

I, on my part, admit, of course, that infantile vaccination, if efficiently carried out—that is, if the great majority of infants born are vaccinated—does protect the child population; but if a large proportion of children remain unvaccinated, as is the case at present to an increasing extent, then I suggest that it is quite conceivable that the child population *as a whole* is prejudiced rather than benefited. It was the same when inoculation was practised. If every child had been inoculated, inoculation would have been of great benefit, especially at a time when small-pox was very prevalent. But if only a proportion of children were inoculated, they served to spread the disease to those who were not inoculated, so that the child population as a whole was prejudiced. Moreover, the benefit to be derived from inoculation would necessarily diminish as the prevalence of small-pox diminished.

My next point is that, under modern conditions of small-pox control in this country, the risk of children contracting small-pox, even though they be unvaccinated, is very much less than has usually been supposed. Our ideas about this are chiefly drawn from the days when the modern methods of control were not practised, or at least not efficiently. The case of Gloucester is often quoted. There the unvaccinated children suffered cruelly. But those who have studied the details of that outbreak will admit that modern methods of control most certainly were not carried out. In Leicester, on the other hand, in spite of the fact that 90 per cent. of the children are unvaccinated, they have hitherto escaped remarkably lightly. I have been M.O.H. for nineteen years, and during that time I have had to deal with over 700 cases of small-pox, but so far I have never once thought it necessary to close an elementary school (though I once closed a Sunday school). No doubt I have been very fortunate, but my predecessor (Dr. J. Priestley) had a similar experience. This rather supports my contention that it is not so much the unvaccinated as the vaccinated persons who, under modern conditions, spread small-pox.

Again, it must be obvious to all that if we succeed in virtually banishing epidemic small-pox from this country—and the experience of the past fifteen years certainly suggests that we may do this—then the danger of children contracting the disease will become almost negligible, even though infantile vaccination were to go entirely out of fashion. At the same time our children would escape the temporary (and sometimes permanent) ill health which is caused by vaccination, and which in the aggregate comes to a considerable amount.

Of course, in the event of any local or temporary breakdown in our preventive measures—that is, if an epidemic of small-pox should at any time arise in an unvaccinated community and get out of hand—we have always got emergency vaccination to fall back upon. This fact should help to reassure those who still feel seriously apprehensive at the extent to which infantile vaccination is falling into disuse.—I am, etc.,

Leicester, July 31st. C. KILLICK MILLARD.

ADVERTISEMENTS OF PRACTICES.

SIR,—On behalf of those who like myself are trying to buy a practice or partnership, could not some restraining influence be brought to bear on agents and advertisers to have the advertisements bear some resemblance to the practice to be purchased? In these days of high railway fares and increased postage, the amount of time and money wasted because this is not done is considerable. Many to whom I have spoken have, rightly or wrongly, come to consider many of these advertisements as "duds," put in by agents to have the names of medical men, who reply, on their books.

Some agents in their books of instructions ask us, when writing to vendors, not to ask any questions that are answered in the particulars supplied. I have always observed this, but two of my last experiences are typical of many. In the former that I visited not a single figure supplied was correct, and in the latter, the advertisement of which is still appearing, "the nice house available, rent ..... p.a." turns out to be "4 unfurnished rooms—as a temporary expedient." Believe me, I am voicing a real grievance, and one that men spoke to me of when I was a vendor. I would suggest that the vendor should sign all particulars as to statements of fact.

When will the British Medical Association feel itself strong enough to undertake a co-operative medical agency itself? The loss from advertisements at first would be considerable, but the subsequent gain in influence and financially is unquestionable.—I am, etc.,

Ryde, July 21st. EDMUND S. HALL.

A BLIND ALLEY.

SIR,—It was with interest that I read the letter of your correspondent "One of Them" (July 3rd, p. 29) on the status of the assistant school medical inspector and the harm resulting from it. Experience of school work has brought home to me a real apprehension that a branch of the Public Health Service is by the present system being robbed of its most life-giving properties. I hold that there is no more essential service in all public health than that of the schools, for, surely, in getting hold of the children we are at the very sources of prophylaxis. Yet the school medical officer is regarded as holding the lowest rank in the service, and he knows that so long as

he serves the schools he will be looked upon as a perpetual junior. This will not encourage him to give his best years and energies to the work, but this is not the worst. He finds that he is not able to bring the fruits of his experience to the general stock because as the last subordinate in a militarized scheme, he may not speak except through and at the will of, his immediate superior. His Medical Officer of Health is as sacrosanct as any D.M.S. of our R.A.M.C. days, and his Committee as remote as the War Office. He is not consulted in administrative matters even when they concern the branch of the work with which he is most conversant. When we were in the R.A.M.C. we cheerfully submitted to having our prescriptions revised or our treatment reversed by our C.O. This was war. But did military methods, even in war, bring out the best that was in us, and is there any argument for their application to a great peace service? There will be no lack of applicants for posts offered at a salary not ungenerous to those of no experience. But when experience has come, and the doctor has something to give to the general sum of knowledge, will he be content to stop where he can speak only when permitted, and then only through the medium of his accredited mouthpiece? We are all equal before the General Medical Council. Why are we not fit to mingle with our officers and committees, and speak to them face to face? These methods will drive keen and experienced men and women from the school service, and as a believer in its enormous potentialities, I look on this as a catastrophe. Among many already the school service is despised. Is it for its own officers to make it despicable?—I am, etc.,

July, 1920. S. M. I.

MEDICAL RESETTLEMENT.

Sir,—May I call attention to a grievance which is a very real one to me as well as to many others?

I am a general practitioner of thirty years' standing. I left my practice in 1915 and served for four and a half years in the R.A.M.C., being demobilized last March. On my return I find the practice which I had built up in seventeen years practically non-existent; my professional friends were as far as possible loyal, and have returned to me those few patients who remain; but in the four and a half years' absence the exodus, and especially four and a half war years, has been very serious—fully three-quarters of the number—and of course those who have come into their houses have been absorbed into the practices of the doctors who stayed at home.

Finding the straits to which my practice had shrunk, I applied for temporary work on medical boards, or as pension referee, but was told that all these posts were now occupied, but should a vacancy occur my application should receive attention.

Now, four months later, I hear from a professional friend that there are, still serving on medical boards, civilian practitioners who have never left their practices at all, and actually in some cases men who have not even been doing part-time war work, except medical boards during the war.

Is this fair? We gave up much, voluntarily of course, but surely those who remained at home and reaped the harvest of the new comers should be willing to give up the few posts and minor emoluments to those who are finding themselves unable to make both ends meet.—I am, etc.,

August 1st. Ex-Captain R.A.M.C.

Obituary.

JOHN HENRY EWART, M.R.C.S., L.R.C.P., Eastbourne.

The sudden death of Mr. J. H. Ewart on August 1st, at his residence, will be felt as a personal loss by all his brother practitioners and by a very large circle of friends outside the medical profession.

Mr. Ewart, who was 73 years of age, led an active life up to the hour of his death. He was an old Tonbridge boy, and commenced life in the city, but after a short experience there he entered as a student at Guy's Hospital, where he made many lifelong friendships. He obtained the diplomas M.R.C.S. and L.R.C.P. in 1871. When qualified he started practice in Manchester and soon gained the position of surgeon to St. Mary's Hospital for Women and Children.

The loss of both his first and second wives unsettled him, and he came to Eastbourne, where he was before long taking a leading part in professional as well as social affairs, in all of which he attained a lasting popularity. Mr. Ewart for many years represented his Division of the British Medical Association and was on the Central Ethical and other Committees, always showing himself an enthusiastic champion of everything which promoted the honour of the profession; when, a few months ago, he did not seek re-election, a special honour was done him by his colleagues by the invitation, which he accepted, to remain upon the Ethical Committee.

Endowed with a personality which betokened a transparent honesty of purpose, Mr. Ewart commanded the respect and affection of his fellow practitioners, and was able to give them his opinion with a characteristic directness which endeared him to his fellows rather than gave the offence his generous nature never allowed him to intend. A sportsman in the best sense of the word, he loved horses and dogs only a little less than children, whose confidence he always gained and enjoyed. As a Mason he reached high rank, and consistently practised outside the lodge those virtues which he professed within it.

Surgeon-General William Gerard Don, who died recently after a short illness at his residence in Canfield Gardens, Hampstead, was born at Stracathro, Forfarshire, in January, 1836, the youngest son of Alexander Don of Ballownie. He received his early education locally, and subsequently studied at the universities of Aberdeen and Edinburgh, graduating M.D. at the latter in 1857, having taken the diploma of L.R.C.S. in 1856. He served as medical volunteer in the *Duke of Wellington* with the Baltic Fleet in 1855 and was present at the bombardment of Sveaborg, for which he received the medal. Entering the army as assistant surgeon in January, 1858, he attained the rank of brigade surgeon in September, 1883, and retired with an honorary step as deputy surgeon-general in April, 1885. In the old regimental days he served for ten years in the 28th Foot, now the 1st Battalion, Gloucestershire Regiment, with which he went through the Mutiny and afterwards with the Royal Engineers. In the Indian Mutiny he took part in the operations against Tantia Topee in Central India, including actions at Raipur and Beilkara, was mentioned in dispatches and received the medal. From 1879 to 1885 he was employed in the War Office and for seventeen years after his retirement, 1885–1902, was senior medical officer of the recruiting staff in London. During the Egyptian war he was engaged in the fitting out of the hospital ships. He was connected with most of the Scottish societies in London, was president of the Caledonian Society in London and a life governor of the Royal Scottish Corporation. Surgeon-General Don rendered great assistance to the British Medical Association in the long fight for the formation of the Royal Army Medical Corps which culminated in its establishment in 1898, and was a frequent contributor to our columns. He published a book on *Recollections of the Baltic Fleet of 1855*, and also one on *Archaeological Notes on Early Scotland*, and edited the Army Medical Regulations of 1885. He married twice and leaves five sons and four daughters.

Dr. Joseph Needham, who died on August 2nd, aged 67, received his medical education at the London Hospital and the University of Aberdeen. He took the diploma of M.R.C.S.Eng. in 1875, graduated M.B., C.M.Aberd. with honours in 1879, and became M.R.C.P.Edin. in 1880. He had filled the posts of resident physician and house-surgeon at the London Hospital, assistant to the professor of anatomy in the University of Aberdeen, and demonstrator of histology at the London Hospital and the London School of Medicine for Women. He was anaesthetist to the 3rd London General Hospital, the King George Hospital, and the Kensington Red Cross (Weir) Hospital, surgeon to the Western Division of the Metropolitan Police, receiving the Coronation medal in 1911, and medical officer to the Education Department of the London County Council. He was a member of the Wandsworth Division of the British Medical Association.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

The following candidates have been approved at the examinations indicated:

Diploma in Medical Radiology and Electrology.—*Part I (Physics and Electrotechnics)*: W. W. Boyce, J. P. Bracken, N. H. M. Burke, H. W. Collins, G. E. Dyas, T. G. Evans, W. C. Long, G. T. Loughborough, H. B. Mackenzie, T. Marlin, H. C. Nott, C. M. Rigby, C. A. Robinson, S. W. Shields, J. van Roojen, J. L. Waller, Eva M. White. *Part II (Radiology and Electrology)*: W. W. Boyce, H. W. Collins, G. E. Dyas, T. G. Evans, M. H. Knoch, W. C. Long, G. T. Loughborough, H. B. Mackenzie, T. Marlin, H. C. Nott, C. M. Rigby, C. A. Robinson, S. W. Shields, J. van Roojen, Eva M. White, Justina A. Wilson.

UNIVERSITY OF LONDON.

A meeting of the Senate was held on July 21st. The following were recognized as teachers of the University at the institutions and in the subjects indicated:

St. Bartholomew's Hospital Medical School.—Dr. M. Donaldson (Midwifery and Diseases of Women), Dr. F. R. Fraser (Clinical Medicine), Dr. Mervyn Gordon (Bacteriology), Sir T. J. Horder (Medicine), Mr. R. F. Moore (Ophthalmology), Mr. J. E. H. Roberts (Surgery), Dr. B. H. Spilsbury (Morbid Anatomy and Histology), Dr. R. L. Mackenzie Wallis (Pathological Chemistry).

St. Thomas's Hospital Medical School.—Dr. J. L. Birley (Neurology), Dr. H. L. Tidy (Medicine).

Westminster Hospital Medical School.—Mr. A. T. Edwards (Surgery), Mr. E. W. Gandy (Anaesthetics), Dr. H. J. Norman (Mental Diseases).

St. George's Hospital Medical School.—Mr. E. L. Hunt (Bacteriology and Clinical Pathology).

London Hospital Medical School.—Mr. H. R. Jeremy (Ophthalmology), Mr. E. C. Lindsay (Surgery).

It was resolved to institute a University chair of Chemistry and a University Readership in Pharmacology at Guy's Hospital Medical School.

It was decided to discontinue certain exemptions for examinations for medical degrees which had been granted during the war. The second examination for medical degrees will be held in December, 1920, but the subsequent examinations will be held in March and July only, as set forth in the regulations.

Sir Wilmot Herringham has been appointed chairman of the Gresham Legacy Committee and the Vice-Chancellor (Dr. Russell Wells) chairman of the Site and Accommodation Committee.

Applications for the posts of "Professor of Medicine" and "Director of the Medical Clinic" at St. Bartholomew's Hospital Medical School and at St. Thomas's Hospital Medical School respectively must be received by the Academic Registrar not later than the first post on September 27th. The salary is £2,000 a year for each post.

The senior class gold medals of the Faculty of Medical Sciences has been awarded to Doris L. Durie for anatomy and Elfrida L. G. Hill for physiology.

The following candidates have been approved at the examination indicated:

M.S. (*Branch I, Surgery*).—R. N. Cooper, Maud F. Forrester-Brown, Emily C. Lewis, F. C. Mason, G. T. Mullally, B. S. Simmonds, J. Taylor.

The first examination for the recently instituted Diploma of Psychological Medicine will be held in October and November. Copies of the regulations can be obtained from the University Extension Registrar.

The D.Sc. degree in Experimental Psychology has been conferred upon A. Abelson and G. E. Phillips.

King's College Hospital Medical School.

The following appointments have been made: Tutor to Cambridge students, A. C. D. Firth, M.A., M.D., F.R.C.P.; Tutor to Oxford students, Raymond Crawfurd, M.A., M.D., F.R.C.P.; Demonstrator in Dermatology and Sub-Dean of the Medical School, J. A. Drake, M.D., M.R.C.P.

A "Burney Yeo" entrance scholarship of £80 has been awarded to F. W. Furniss, B.A., of Downing College, Cambridge.

London (Royal Free Hospital) School of Medicine for Women.

The following scholarships have been awarded from October next: St. Dunstan's Medical Exhibition to Miss E. Masterman; Isabel Thorne Scholarship to Miss E. Adams Clarke; Mabel Sharman Crawford Scholarship to Miss F. I. Moore; Sir Owen Roberts Memorial Scholarship to Miss M. Bowstead; Lewis Memorial Scholarship to Miss E. H. R. Newboult.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

The trustees of the Dr. Jessie Macgregor Prize for Medical Science announce the award of the prize for the present triennial period to Miss Lucy Davis Cripps, M.B.E., M.B., Ch.B.Edin., for her work on tetryl. The prize, which is open to medical women graduates of Edinburgh University or to women who have taken the triple qualification, is awarded to the applicant who presents the best record of original work in the science of medicine, done not earlier than three years prior to the date of the award.

The Services.

ROYAL ARMY MEDICAL CORPS APPOINTMENTS.

An Army Order published on August 9th provides that medical practitioners who are required for service in an emergency shall be commissioned into the Special Reserve or Territorial Force, under the same conditions of service and the same rates of emoluments as apply to officers of those forces; and that, in the event of it being found necessary to grant temporary commissions, officers to whom such commissions are granted shall not receive more advantageous emoluments than those applicable to officers of the Special Reserve and Territorial Force.

Officers of the Special Reserve or Territorial Force who have passed through a Royal Army Medical Corps unit of the Officers' Training Corps will be granted, on first appointment to the Special Reserve or the Territorial Force, seniority of six months if they have by examination obtained Certificate B (Medical) and seniority of three months if they have obtained Certificate A (Medical). On mobilization officers who have obtained Certificate B or Certificate A will be considered for appointments in preference to those not so qualified.

HONOURS.

The following honours and awards have been granted for valuable services rendered in connexion with the Afghan Campaign, 1919.

K.C.I.E.—Major-General Patrick Hehir, C.B., C.M.G., C.I.E., I.M.S.

C.S.I.—Major-General Harold Hendley, I.M.S.

C.I.E.—Lieut.-Colonel H. Dixon Packer, R.A.M.C.; Temporary Lieut.-Colonel John Francis Haswell, R.A.M.C.; Major Alexander Frederick Babonau, O.B.E., I.M.S.

C.B.E. (*Military*).—Lieut.-Colonel (acting Colonel) Harold Boulton, I.M.S.; Colonel Percy Carr-White, K.H.P.; Lieut.-Colonel James Geoffrey Gill, D.S.O., R.A.M.C.

O.B.E. (*Military*).—Captain (acting Lieut.-Colonel) Phirozshah Byramji Bharucha, D.S.O., I.M.S.; Captain Herbert Stuart Blackmore, R.A.M.C.; Major (acting Lieut.-Colonel) William Walker Browne, R.A.M.C.; Major Cecil Edward Bulteel, I.M.S.; Major (acting Lieut.-Colonel) Alexander Cameron, I.M.S.; Temporary Captain Pascal John de Sousa, I.M.S.; Temporary Lieutenant Bhola Nath Gupta, I.M.S.; Captain (acting Lieut.-Colonel) John Patrick Huban, I.M.S.; Temporary Captain Robert Walpole Murphy, R.A.M.C.; Captain Robert Boulton Myles, R.A.M.C.; Captain Forster Heddle Brown Norrie, R.A.M.C.(S.R.); Temporary Captain Aiyappen Padmanabba Pillay, I.M.S.; Captain and Brevet Major Charlie Ryle, R.A.M.C.

M.B.E. (*Military*).—Temporary Captain Yashwan Bhicajee Ranade, I.M.S.

D.S.O.—Captain and Brevet Major (temporary Major) Eric Edward Doyle, I.M.S.

M.C.—Captain James Edwin Carpenter, R.A.M.C.(S.R.), attached 28th Motor Ambulance Convoy; Captain Denis FitzGerald Murphy, I.M.S.

To be Brevet Lieut.-Colonel.—Major R. S. Kennedy, D.S.O., M.C., I.M.S.

To be Brevet Major.—Captain G. A. Blake, R.A.M.C.; Captain (temporary Major) T. A. Hughes, I.M.S.

Mentions.

The names of the following have been brought to notice for distinguished services during the operations against Afghanistan:

Commands and Staff and Miscellaneous.

Colonels H. F. Cleveland, C.I.E., I.M.S.; T. W. Gibbard, C.B., C.B.E., K.H.S., A.M.S.; C. W. Profeit, C.M.G., D.S.O., R.A.M.C.

Lieut.-Colonel and Brevet Colonel (temporary Colonel) A. H. Safford, R.A.M.C.

Lieut.-Colonel (temporary Colonel) H. P. W. Barrow, C.M.G., D.S.O., O.B.E., R.A.M.C.; Captain A. G. Biggam, R.A.M.C.

Medical Services.

Colonels: P. Carr-White, I.M.S., T. Stodart, I.M.S.

Lieut.-Colonel (acting Colonel) H. Boulton, I.M.S.

Lieut.-Colonels E. Rost, O.B.E., I.M.S., J. G. Gill, D.S.O., R.A.M.C.

Majors (temporary Lieut.-Colonels): H. M. Brown, I.M.S., A. Cameron, I.M.S.

Majors: C. E. Bulteel, I.M.S., D. Coutts, I.M.S., T. S. Dudding, R.A.M.C., T. H. Gloster, I.M.S., T. C. C. Leslie, R.A.M.C., A. A. Meadon, D.S.O., R.A.M.C., W. E. A. St. Romaine, I.M.D., G. S. Wallace, R.A.M.C., H. C. Winckworth, R.A.M.C.

Captains and Brevet Majors: E. E. Doyle, I.M.S., C. Ryles, R.A.M.C., J. A. Sinton, V.C., I.M.S.

Captains (acting Lieut.-Colonels): P. B. Bharucha, D.S.O., I.M.S., J. P. Huban, I.M.S.

Captains (temporary Majors): C. H. H. Harold, R.A.M.C., Mahomed Abdur Rahman, I.M.S.

Captains: H. S. Blackmore, R.A.M.C., W. S. Birch, M.C., R.A.M.C. (S.R.), D. G. Cooper, I.M.S., W. M. Dickson, R.A.M.C.(S.R.), D. Fettes, R.A.M.C.(T.C.), J. B. Fotheringham, R.A.M.C., J. B. Hanafin, I.M.S., I. J. O. K. Khaw, I.M.S.(T.C.), R. B. Myles, R.A.M.C., G. S. Phillips, R.A.M.C.(T.C.), F. H. B. Norrie, R.A.M.C.(S.R.), W. J. D. Smythe, R.A.M.C.

Temporary Captains: P. J. De Sousa, I.M.S., R. W. Murphy, R.A.M.C. A. P. Pillay, I.M.S.

Temporary Lieutenant B. N. Gupta, I.M.S.

Some twenty-five assistant and subassistant surgeons are also mentioned.

Professor W. C. Röntgen has been elected an honorary member of the Vienna Academy of Sciences.

The *Archives de médecine expérimentale et d'anatomie pathologique*, founded by Charcot in 1889, has ceased publication.

Medical News.

THE old students of St. Bartholomew's Hospital and College will hold their annual dinner on Friday, October 1st, at 7 o'clock, in the great hall of the hospital. Sir Anthony Bowlby, P.R.C.S., will preside.

A POST-GRADUATE course of instruction for qualified medical women in the treatment of venereal diseases will be held during the fortnight beginning Monday, September 13th. The course is in connexion with the London (Royal Free Hospital) School of Medicine for Women and the Royal Free Hospital, the Elizabeth Garrett Anderson, and the London Lock Hospitals. Application should be made to the Warden and Secretary, Medical School, 8, Hunter Street, Brunswick Square, W.C.1, from whom all particulars can be obtained.

THE National Council for Combating Venereal Diseases informs us that there is a vacancy for a medical man on the Commission which it is proposed to send to the East Indies and China during the coming autumn. The Commission, which is being sent out under the auspices of the Colonial Office, will be away about four months from the end of October. The Medical Commissioner will receive a substantial honorarium in addition to payment of all expenses. Preference will be given to one who has had experience in the administration and control of a special Venereal Clinic. Applications for further particulars should be addressed to the Secretary, National Council for Combating Venereal Diseases, 80, Avenue Chambers, Southampton Row, London, W.C.1.

THE King has consented to become Patron of the People's League of Health, which was founded and organized by Miss Olga Nethersole, and has a large and representative medical council. The head quarters are at 7, Hanover Square, London, W.1.

AT the meeting of the Council of the Metropolitan Hospital Sunday Fund, held on August 5th, the chairman announced that the amount available for distribution was £110,000, or £25,000 more than the previous record in 1918.

THE grant of £15,500 from the surplus Red Cross Funds allocated by King Edward's Hospital Fund to the Great Northern Hospital is for a nurses' home, new kitchen, and other essential improvements. The scheme the hospital has in view includes new casualty and out-patient departments, and additional wards.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin:* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"TAXPAYER" inquires what repayment can be claimed on a net taxed income of £376 18s. 6d. from investments, etc.

*** The gross income before deduction of tax appears to be approximately £540. On that basis our correspondent would be entitled to repayment as follows:

	£	s.	d.
1. To reduce 6s. rate to 3s. 9d.—that is, 2s. 3d. in £ on £540	60	15	0
2. Abatement of £100 at 3s. 9d.	18	15	0
3. Allowance for wife—£50 at 3s. 9d.	9	7	6
Total amount repayable	88	17	6

The fact that the capital from which the income is derived was saved from earnings does not entitle "Taxpayer" to the "earned" rate of income tax.

"A. C. P." inquires as to the assessment of the following income:

	£	s.	d.
Medical officer, pay and bonus	840	0	0
Pension	324	0	0
Interest, not taxed before receipt	50	0	0
Interest which is taxed before receipt	35	0	0
	1,249	0	0
*** The assessment would be as follows:			
Total income	1,249	0	0
Deduct—10 per cent. allowance for earned income —that is, 10 per cent. of £1,164 ... =	116	8	0
Total assessable income	1,132	12	0
Deduct—Allowances, self and wife ... £225			
Child ... ... £36—	261	0	0
Total income chargeable to tax	871	12	0
Amount of tax chargeable—£225 at 3s.	33	15	0
£646 12s. at 6s. ...	193	19	7
	227	14	7

From this sum has to be deducted the life assurance allowance, and also the allowance in respect of the Widows' and Orphans' Fund, if the particular fund has complied with the usual conditions. Our correspondent should fill in the declarations with regard to wife and child, notwithstanding the limitation with regard to total income mentioned on the form, for that limit no longer applies. The tax payable on his pension and on his pay should be so arranged as to yield, together with the tax deducted from his income from taxed sources, the total liability.

RESEARCH AND THE GENERAL PRACTITIONER.

DR. W. J. BAIRD (Bury) writes: The disabilities of the recent war have given an impetus to research and have made us revise opinions held hitherto on many subjects. As one engaged for many years in general practice, I have felt that the problems and results of research work should be presented to us in the form of special lectures at our local medical societies, as we have so little time at our disposal for study, and in the majority of cases no access to special publications. For example, one might mention the question of vitamines, the endocrinic glands, the functional psychoneurosis, cardiac disabilities, trench nephritis, and the sequelae of the various tropical diseases encountered daily amongst army pensioners. Lectures on such subjects given by those engaged in actual research would prove helpful, not only to the general practitioner, but stimulating to his general interest in the public welfare. There are many practitioners who for obvious reasons cannot avail themselves of post-graduate instruction at universities, and the above suggestion is advanced in view of contingencies which are bound to arise once the Ministry of Health takes an active part in medical administration.

*** The British Medical Association has been endeavouring to supply the want our correspondent feels. British Medical Association lectures have recently been given on most of the subjects he mentions, and reports of the lectures have appeared in our columns.

LETTERS, NOTES, ETC.

PENSIONS APPOINTMENTS.

WE are informed that the Ministry of Pensions intends to make one or two appointments in connexion with the work at their limb-fitting hospitals which would suit a disabled R.A.M.C. officer. Certain preliminary tuition will be necessary in order to pick up the technical side of the work, but it is considered that a month's training at Roehampton will suffice. We understand that there are two such posts vacant at a salary of about £600 per annum, and are glad to know that the Ministry of Pensions intends to appoint men who have been disabled by the war and who are consequently unable to stand the strain of ordinary practice. Inquiries should not be addressed to this office, but to the Medical Department, Ministry of Pensions, 14, Great Smith Street, S.W.

TENNIS ELBOW.

DR. J. A. NIXON, C.M.G. (Clifton, Bristol), writes: The query by Dr. Havelock on this subject sent me back to Sir James Paget's *Studies from Old Case Books* (Longmans, 1891, p. 7). In the lecture on periostitis following strains he refers to lawn tennis elbow. I am not sure that anything more informing has been written.

DR. F. BRYAN (Ipswich) writes: I am glad to see that this prevalent "trivial ailment," ignored by textbooks, is being discussed. I would suggest that a predisposing cause of its frequency is that many of us, ladies especially, have during recent years been compelled to carry heavy parcels and suit cases, often for considerable distances. This has produced a strain on the extensor muscles arising from the external condyle of the humerus. It is in this region and in the radio-ulnar ligament that the seat of pain lies. Limitation of tennis, rather than cessation of the same, seems beneficial;

but more important is the avoidance of carrying weights which cause a prolonged effort, as opposed to an intermittent one on the part of the muscles. This is borne out, again, in the case of Badminton, which, because of quick extension efforts very frequently repeated, accentuates the pain of a previous tennis elbow more than does a game of tennis.

MYOPIA.

DR. ARTHUR T. BLEASE (Altrincham) writes: In the JOURNAL of July 24th, p. 126, I note a short report of a paper read by Dr. H. M. Traquair before the Edinburgh Medico-Chirurgical Society in which he refers to the success attending the correction of myopia in patients who complain of difficulty in near vision. This is the first time I have seen this point alluded to, and I should like to support him by saying that his experience corresponds entirely with my own. Many of these patients suffer much from headache, which is completely relieved by glasses which exactly correct the defect. I have no doubt the scientific reason advanced by Dr. Traquair is the correct one. Although, as Dr. Traquair says, the danger of over-correcting myopia in young persons by examination without atropine is greatly exaggerated, this should not, in my opinion, lead to the ordering of the first lenses for a myopic child without previous use of atropine. The danger is really on the other side, for by straining, and also by partial closing of the lids or by looking obliquely through the lens in the trial frame, a child can mask some small portion of his myopia, and certainly 1 or even 1.5 dioptres of astigmatism; the prescription will then under-correct the myopia. This last is a very grave error, far worse than, say, half a dioptre of over-correction, because I am certain from the results in my own practice in my very early days, when under-correction was generally recommended, that if we keep the correction just behind the actual myopia the myopia will increase, whereas if we fully correct the myopia and astigmatism (if any), the myopia, as a rule, will not increase or only very slowly. I note that Dr. Traquair recommends full correction in myopia.

My excuse for wishing to emphasize these points is that the cases of low myopia with trouble in near vision are associated with much discomfort to the patient, and are often not cured because the surgeon has adopted the view that myopia is not a cause of headache and eyestrain symptoms; and also that the necessity for an examination under atropine and full correction of both myopia and astigmatism is not fully realized. I myself, from the age of 11 until I was able to correct my own error of refraction (at an age when atropine was not so necessary), suffered from very poor distant vision, because two leading ophthalmologists thought they could manage my case without atropine, and therefore overlooked the fact that in addition to the spherical lenses they ordered I required a 2 D cyl. in one eye and a 2.75 D cyl. in the other. I know of other similar cases among medical friends and ordinary patients. One of the latter had been told by a very eminent oculist that if he continued his studies for a learned profession he would probably be blind before he could pass his examinations. This opinion appeared to be based upon his extremely bad vision with the lenses prescribed, in which on one side the spherical correction was too high, and on both sides the cylindrical correction was about half of what it should have been and wrongly inclined. If in a case of this kind the parents complained of their son's damaged prospects, it would, I think, be difficult for anyone, especially a professed expert, to show that he had used reasonable competence and care in the absence of an examination under atropine.

DR. RALPH HOPTON, Oculist to the Leeds Education Committee, writes: In connexion with the discussion as to whether close work does or does not cause and intensify myopia, it is worth while recording that a careful examination of the sight of each of the fifty-two severely short-sighted children who are being specially educated in myopic classes in this city, and so are almost freed from close work, shows that not one has become worse since entry into the class, though many up to that time were cases of progressive myopia. Many cases have improved.

LONGEVITY IN SOMERSET.

DR. W. EDELSTEN BRACEY (Wedmore, Somerset) writes: It has been a matter of considerable surprise to me to discover the interest my short letter in a recent issue of the JOURNAL has aroused in the public press. . . . I have since been called to two further such cases, again both occurring on the same night, and in each of these the great grandfather has been resident under the same roof. That is to say, in four out of the five consecutive confinements I have attended during the past three weeks, a great grandparent has been living in three of the houses, and a great-great grandparent in the fourth!

FAUCIAL ANGINA.

DR. F. D. BANA (Bombay) writes: You report in the Epitome (June 5th, 1920, No. 626) "An epidemic of throat disease due to the pneumococcus" investigated by A. Heinl, in which he found the usual remedies, and especially diphtheria and staphylococcus serum, useless. Recently I had two cases of faucial angina. In the first there was a peritonsillar and retropharyngeal abscess which I opened and gave 10 c.cm. of antistreptococcus serum. The patient, who ran up 104° F., was well in four days. Smears showed diplococci—a *Streptococcus brevis*—no pneumococci. Another case began with injection of one tonsil and adenitis on the same side. The membrane spread to the other tonsil. Here, again, after 20 c.cm. of antistreptococcal serum and 4,000 units of diphtheria antitoxin the disease was cut short in four days. Smears showed no pneumococci but diplococci—I believe a short streptococcus. The fever in this case also reached 104° F. and the patient had a serum rash and arthritis lasting a couple of days. Both made rapid recoveries. I believe the affections of the throat were due to the lowered vitality after the patients had influenza some time before.

REDUCTION OF DISABLEMENT PENSIONS.

"PENSIONER" writes: In paragraph 5 of the Parliamentary Notes in the JOURNAL for July 31st, p. 182, is published an answer by the Minister of Pensions in reply to a question in the House with reference to reduction of disablement pensions, in which he states "No alteration was made in a board's original estimate of the degree of a man's disablement without further reference to the board, or the authority of a superior board, after a fresh examination of the man."

I was recently resurveyed at Cheltenham Terrace and awarded 30s. disability for two complaints from which I am suffering, and both aggravated by service in the late war. At the survey not a single relevant document in my case was forthcoming, although ample notes on my case were in possession of the authorities, who presumably thought fit not to send them for information of the board. As a result the board gave me 20s. for one and 10s. for the latter, but expressed no opinion as to the cause of the latter (whether it was aggravated by or attributable to service). The medical advisers at head quarters therefore without referring it back to the board, or by the authority of a higher board, reduced the award from 30s. to 20s. (I learnt this from actual application in writing to head quarters.) When one compares this procedure with that stated by the Minister as being the routine that is carried out, it is obvious that the two methods are diametrically opposed. Comment is unnecessary.

THE OYSTER'S CONSOLATION.

(Lines suggested by an antivivisectionist's appeal against the cruelty of eating oysters alive.)

I cannot laugh, I cannot wail, I cannot even droop a tail;
I cannot say how much I feel, I cannot squirm, I cannot squeal.
No eye have I for mute appeal, no tears a-down a cheek to steal;
No brow to dew with anguished sweat, no ear to hear, no mind to fret.

Sprinkled with pepper black or red, I calmly lie as if in bed;
I cannot even raise a quiver when forks are bedded in my liver.
But ah! I have a dainty taste, a palate all around my waist;
So all day long to feed I strive, and swallow all my food alive.

Can I complain if hungry man adopts this very simple plan,
Meting to me the self-same measure by bolting me alive with pleasure?
Yet, pity me not with frantic screech, the opening knife my vitals reach—
Swallowed by epicure or glutton, I am stone dead, as dead as mutton.

H. RAYNER.

CORRECTION.

THERE was a misprint in our report (page 197) of Dr. Amand Routh's contribution to the discussion in the Section of Venereal Diseases, "chromic" appearing in error for "chorionic." The sentence should run: "He had suggested that the chorionic ferments protected the child from the infection by granulosing the spirochaetes and preventing them from developing till after pregnancy."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 31, 32, 33, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 29, 30, and 31.

THE appointment of certifying factory surgeon at Nottingham (North) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	7	6
Each additional line...	0	1	3
Whole single column	6	0	0
Whole page	16	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste-restante* letters addressed either in initials or numbers.